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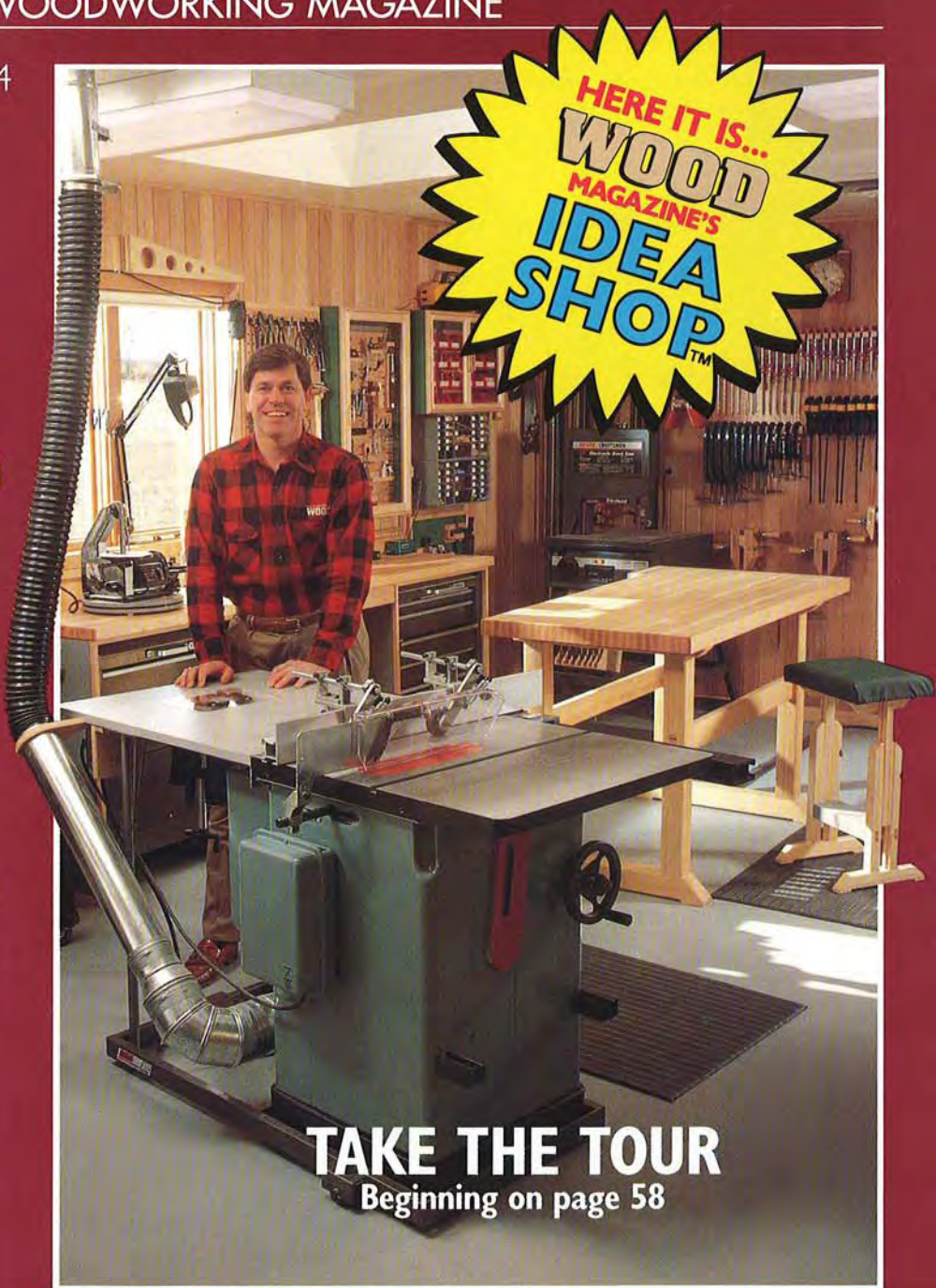

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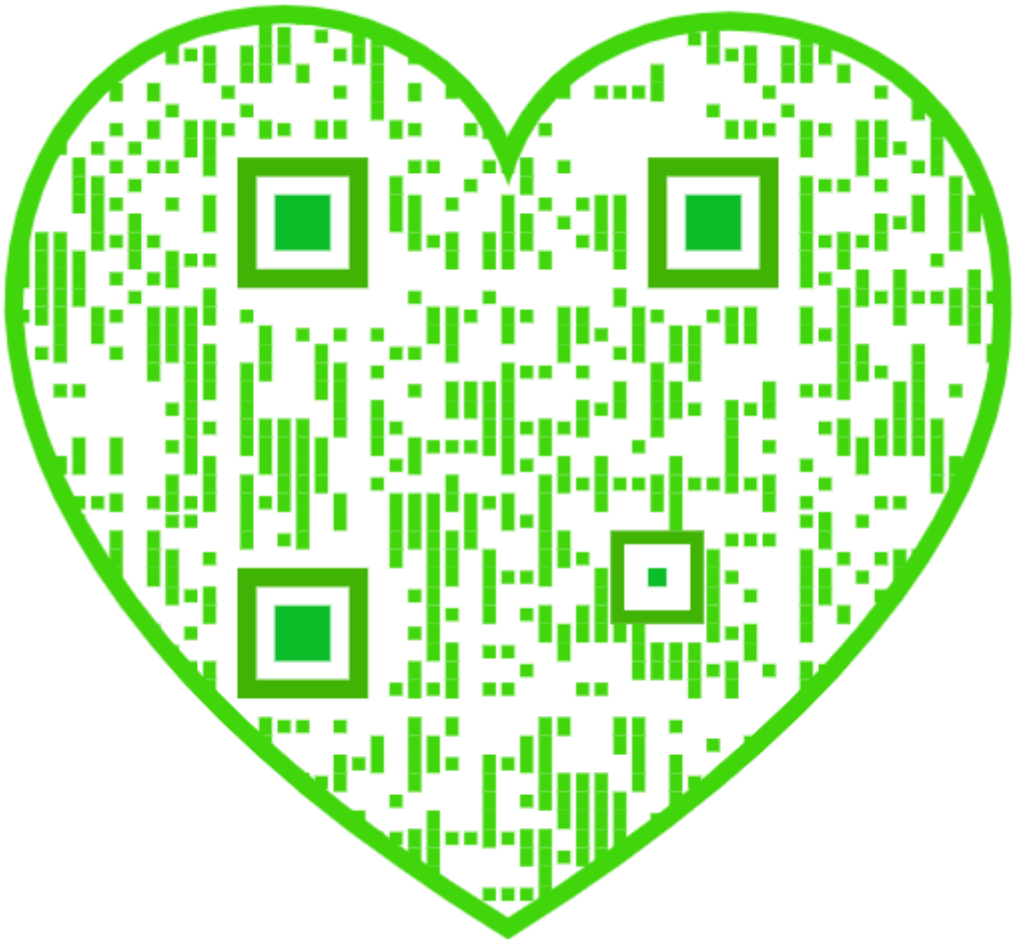

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THE EDITOR'S ANGLE

Print this article

A REAL TEAM EFFORT

The IDEA SHOP mover/shaker club: (left) Jim Harrold, Jim Downing, Bill Krier, Chuck Hedlund, Marlen Kemmet, and Jim Boelling.

Have you ever gotten involved in a project and then midway through realized how large of a job it actually was? Well, that's what happened to the staff and me with the IDEA SHOP.

When the concept first surfaced over a year ago, everyone liked it immediately. And judging from the many letters we've received from readers asking for information about setting up and organizing a shop, we knew you would be interested in what we could come up with.

We approached the project with the zeal of newly ordained missionaries. I volunteered to insulate and drywall the walls and ceiling of our unfinished 14×28′ space, install a couple of skylights, and finish the walls with hemlock paneling boards. Jim Downing, with input from fellow staffers, drew up the floor plan and the other construction drawings. And Jim Harrold began contacting manufacturers to tell them about the IDEA SHOP.

Soon, material, tools, and supplies began arriving, and the project designing and building commenced. One good idea led to another, and, before long, it became obvious to us that we had enlarged the project considerably.

Fortunately, the WOOD® staff is one that won't back down from a challenge. Together, along with some talented free-lancers, we made the IDEA SHOP happen, and we hope you like what you see, starting on *page 58*.

At this time, I'd like to recognize several people for the large parts they played in this project. First, my hat goes off to Jim Downing, who first thought of the idea and later stepped forward as the project manager.

Next, my sincere thanks go to Jim Harrold, who served as our main contact with the many manufacturers involved. And we couldn't have pulled off the project without the able assistance of Bill Krier, who helped select and lay in the woodworking machinery, and Marlen Kemmet, Jim Boelling, and Jim Downing, who did the lion's share of the project designing for the shop.

And finally, thanks to all of the IDEA SHOP project builders, especially Chuck Hedlund, who helped to put the finishing touches on the IDEA SHOP when the rest of us were plumb tuckered out. Way to go, everyone!

Larry Clayton

Photograph: John Hetherington

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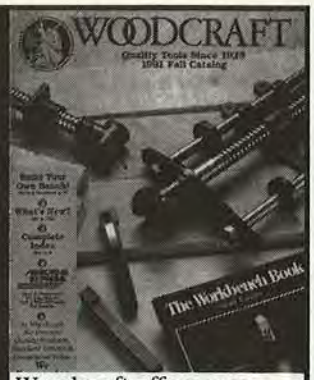

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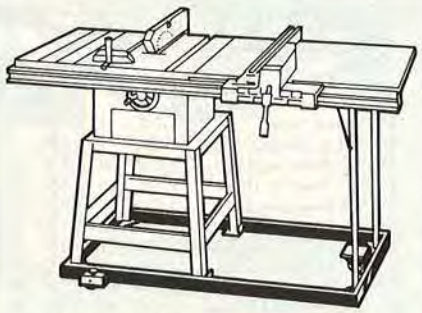

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This issue's cover wood grain: sycamore *Cover photo: Hopkins Associates*

SEPTEMBER 1992 ISSUE NO. 54

CRAFTSMAN CLOSE-UP
Split-ash baskets: Maine style 35
Follow basketmaker Stephen Zeh as he harvests black-ash trees, works the logs into pliable strips, and then weaves the strips into incredibly handsome all-wood baskets of many types and sizes.

CARVING
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With a stick, pocketknife, and idle time, you can make any number of precious small figures with the friendly guidance found here.

TOOL BUYMANSHIP
Meet the dust guzzlers 42
Need big-time help controlling your shop's sawdust? How about a dust collector? For your shopping convenience, we put 11 models to the test and tell which ones take top honors for performance and value.

IN SEARCH OF THE PERFECT FINISH
Art Carpenter's linseed-turpentine-varnish 48
A California master craftsman shares the ingredients of his homemade finish and tells how to apply it for outstanding results every time. This may be the finish you've always wanted.

THE CRAFT SHOP
Classy tissue box cover-up 50
Cover the cardboard container your tissues typically come in with this stylish walnut box.

Fun-to-fashion letter openers 52
Play up the beauty of your wood's grain while crafting one or more of these attractive desk accessories. They make perfect gifts.

TURNING
Tagua turning 54
Shape rings, tiny goblets, and other fine pieces with a material that looks like ivory and works like wood.

Here it is! 58
Whether you're looking for great workshop projects, safety tips, or help in laying out a shop, you'll find everything you need in *WOOD* magazine's all-new IDEA SHOP™.

A workhorse of a workbench 64
Treat yourself to the workbench you've always wanted. This first-class design features a bench vise, dogs, and rugged laminated maple top.

Sit-a-spell shop stool 70
Give those legs a rest with this comfortable project. Dowel pins along the sides let you adjust the seat up or down as needed.

Universal wall-cabinet system 74
Drill bits, lathe tools, hand planes—these make up only a few of the many items you can store in this clever system. Learn how to customize the cabinet for your collections.

Workshop clock 80
Looking for a project that proclaims your love of woodworking? Nothing does it better than our plane-motif shop clock.

Stocked for success 82
Here, find the sources for all of our IDEA SHOP tools and products.

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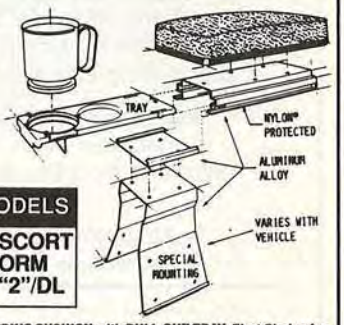

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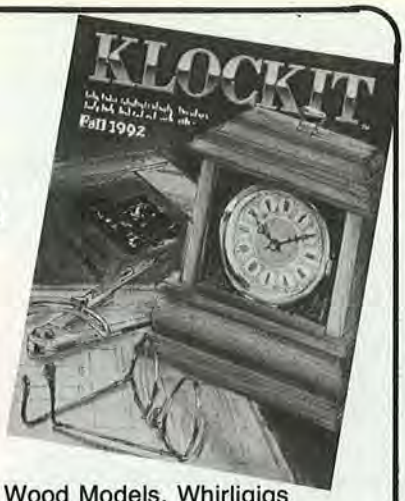

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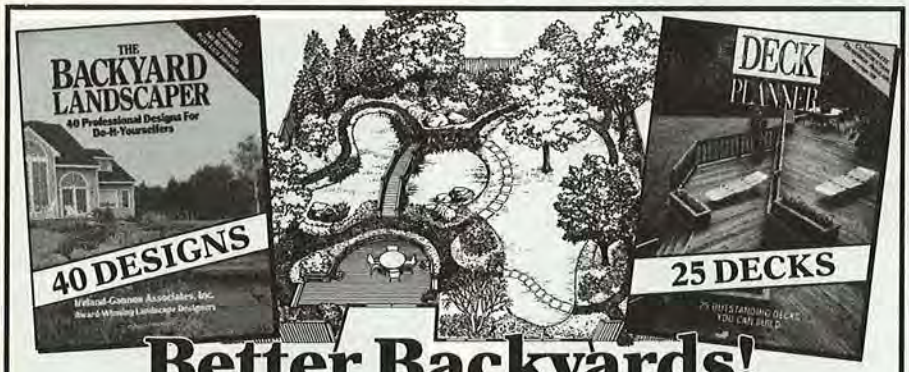

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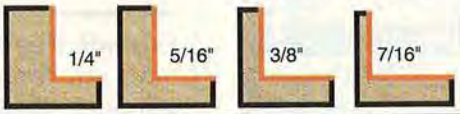

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3) Are your bits machined from a ***Solid Block of Steel*** instead of investment castings?	☒	☐	☐	☐
4) Does every bit feature ***Micrograin Carbide*** for sharper edges and longer life?	☒	☐	☐	☐
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9) Does your router bit supplier offer a lifetime warranty?	☒	☐	☐	☐

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C1290	1-1/2"	5/8"	2-1/4"	1/2"	$25.00

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PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1291	1-1/4"	5/8"	2-1/8"	3/8"	$25.00
C1292	1-1/2"	5/8"	2-1/4"	1/2"	$25.00

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1293	1-1/8"	1/2"	2-1/8"	5/16"	$25.00
C1294	1-3/8"	11/16"	2-1/4"	7/16"	$25.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1295	1-1/8"	1/2"	2-1/4"	5/16"	$25.00
C1296	1-3/8"	5/8"	2-1/2"	7/16"	$25.00

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1297	1-1/4"	5/8"	2-1/8"	3/8"	$25.00
C1298	1-3/8"	5/8"	2-1/8"	7/16"	$25.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1299	1-3/8"	1/2"	1-3/8"	7/16"	$25.00
C1300	1-5/8"	3/4"	2-1/2"	9/16"	$25.00

1/4" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1301	1-1/2"	3/4"	2-1/4"	1/2"	$25.00

1/2" SHANK

PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	CUTTING WIDTH W	PRICE
C1302	1-5/8"	7/8"	2-3/4"	9/16"	$25.00

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PART	CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	BEAD DIA. b	PRICE
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TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, Better Homes and Gardens *WOOD* magazine, P.O. Box 11454, Des Moines, IA 50336-1454. Print this article

More tips on lumber buying

I am a graduate of the NHLA grading school in Memphis, Tenn. I have six year's experience as a lumber inspector at Craig Lumber Corp, Colliersville, Tenn. Your article "Lumber Buying Tips," in the April 1992 issue states that surfaced stock is 4/4" and rough stock is about 1/8" thicker. This is not correct. Rough 4/4" stock must be no more than 1/16" under 1". Standard surfaced thickness for 6/4" and thinner lumber must be no more than 3/16" less than the rough measurement. Therefore 4/4" rough would be no less than 3/4". (Typically, 4/4" is normally translated to mean 1" thick.)

—David N. Vaughn, Colliersville, Tenn.

Found! Peg for Plate Rack

Your article in the April 1992 issue on the "Prize-winning Plate Rack" was a perfect fit for what I needed to complement my plate collection. So, I rushed out to my shop and in short order had a red-oak replica cut out, sanded, and ready to put together—except for one small item. I did not have, nor could I find anywhere in Oklahoma City, a 1¾" shaker peg with a ⅜" wide tenon. A frantic search in supply catalogs failed as well. Help!

—C.B. "Chuck" Bolar, Oklahoma City, Okla.

Chuck, your search has ended. You can order those pegs from the Woodworker's Supply catalog. Ask for "Large micro-shaker pegs," item no. 821-763 in maple or 821-770 in walnut (sorry, no oak, you'll have to stain). These measure 1¼" long, plus the tenon which is ½" to give you an overall length of 1¾". The tenon fits a ⅜" hole, so you won't have to redrill. To order, write: Woodworker's Supply, 1108 N. Glenn Rd., Casper, WY 82601. Or call: 800/645-9292.

Lives at Old Up Yonder Way

All ye woodworkers take heed, Albert Raboff, featured in the April 1992 issue in Front and Center, page 88, *lives at 225 Old Up Yonder Way, Santa Cruz, CA 90756, if you want to contact him. We somehow goofed a bit on the address.*

Replacing pulleys a must

It's about time someone provided an improvement in the power train for our many woodworking machines. I refer to "Products That Perform," September 1991 issue. The Power Twist Belt and machined and balanced cast-iron pulleys should go a long way to improve performance of the common vee belt and zinc-based die-cast pulleys of questionable accuracy. I wish changing the pulley and belt were easier. Why don't tablesaw manufacturers blank out an opening to change the saw arbor pulley? It would be so easy for them to do.

—George Tinetti, Mesa, Ariz.

Bonnie Klein inspires woodturners

Just finished reading your wonderful article about Bonnie Klein and her "Grand Turnings," in the January 1992 issue. My family and I attended the Puyallup, Washington, Fair last year. Bonnie was one of the artisans in the crafts pavillion. She was spinning blocks of maple on her lathe into little finger tops. The crowd was fascinated! She was warm and open, and shared her knowledge and enthusiasm with the woodturners in the audience. As soon as I got home, I started turning tops on my Shopsmith. Thanks to Bonnie's sharing, all the kids in our neighborhood now have colored spin tops.

—Gary Estes, Issaquah, Wash.

Gary, we like Bonnie a lot, too. And the talented lady has really done a bunch to inspire woodturners and promote the skill. We're glad that you had the pleasure of meeting her.

Horse sense solves sawdust situation

I'm writing regarding a "Talking Back" letter about the accumulation of sawdust. I have a solution to that problem. Buy your wife a horse. My wife comes to my woodshop and carries away all the sawdust I make and uses it for bedding for her horses. People in your area with horses would be happy to haul sawdust away and even pay for it.

—Ike Borland, Warren, Penn.

Good idea, Ike. Only one warning: Don't use walnut sawdust for horse bedding. It's toxic to them and can actually kill a horse, according to Eric Reinertson, DVM, Equine Clinic, College of Veterinary Medicine, Iowa State University, Ames.

Continued on page 8

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TALKING BACK

Continued from page 7

Plaudits for Products Guide

The complaint about your November 1991 "Products Guide" issue is unwarranted. I found it very helpful in acquiring new products for my shop. Where else can you find out what's new without hours of searching through the stores and catalogs? I also subscribe to several other woodworking magazines—and find them lacking in new-product information. I appreciate the help your "Products Guide" has given me, and I hope you continue it.

—Tom Spencer, San Mateo, Calif.

More advice on using resin finishes

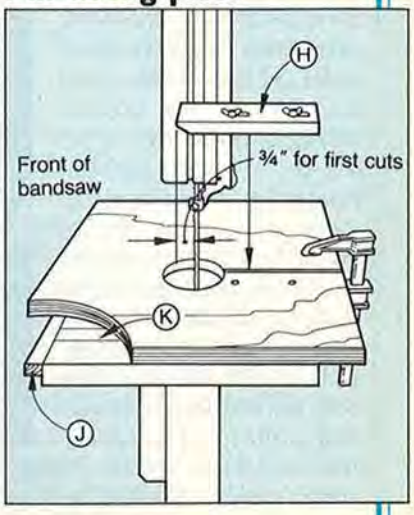
In the December 1991 issue you answered a question on how to use high-gloss resin as a finish [*page 30*]. I've used resin finishes for years, and here's a trick I've learned: Before pouring the resin, put masking tape on the bottom of the project and trim it with a razor blade to follow the contour of the edge. When you pour, you will get some runoff, and it will bead up on the tape you put on the bottom. When the resin gets hard, peel off the masking tape and you have a nice smooth finish with no drips.

—Vern Feezell, Longview, Wash.

Crossbar okay, kerf in wrong place

I'm interested in making the bandsaw dovetail jig featured in the April 1992 issue on *pages 44-51*. However, the two illustrations at the top of *page 51* disagree on the placement of the crossbar "J" under the base. Which is correct, behind or in front of the blade?

—Richard Gillespie, Dumfries, Va.



The crossbar "J" that you mention is positioned correctly in our article, Richard. However, the kerf is shown in the wrong location in the top left illustration on page 51 *of the April issue. See the illustration* above right *for the correct placement of the kerf. We hope we didn't cause you any great problems, and we apologize.*

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crosscut at 90° w/fence forward	28"	37"
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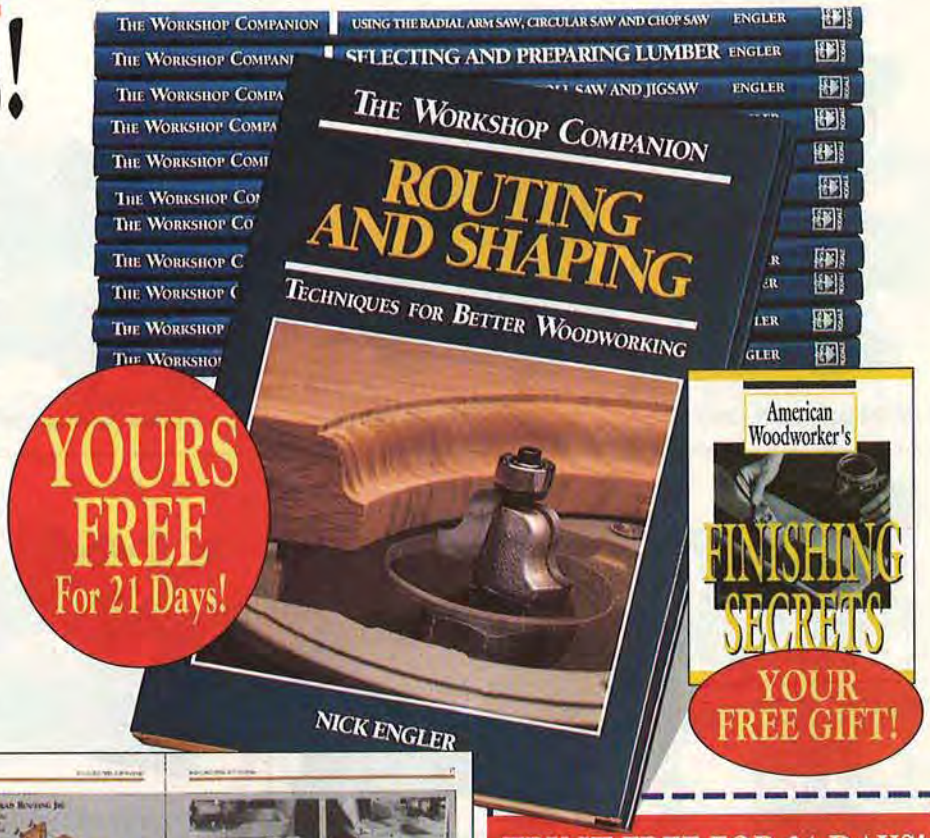

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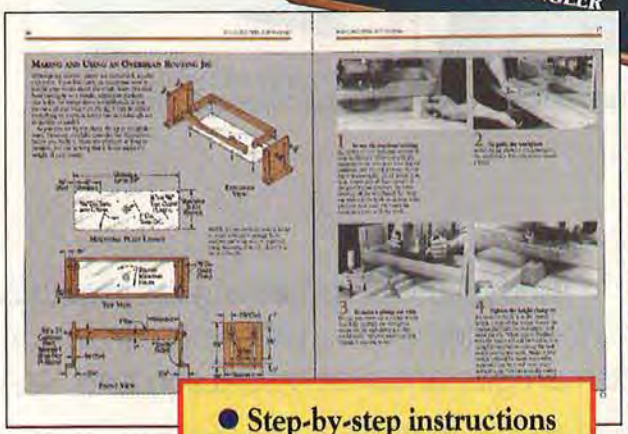

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Print this article

Welcome to a special edition of Tips From Your Shop (And Ours)! Why special? Because the tips and ideas featured here have to do with building, organizing, or improving your home workshop—this issue's theme. We've assembled a great selection of tips, some of which you've sent us and several we came up with ourselves while building and equipping our IDEA SHOP™ (see *pages 58–63*).

Larry Johnston

Larry Johnston
Special-Interest Editor

Sign reminds you to tighten blade

You should loosen the tension of your blade when you won't be using your bandsaw for a while. If you do, both the blade and the tires will last longer. Trouble is, you may forget about the loose blade—until you start up the saw.

TIP: Write "BLADE IS LOOSE" in bold letters on a 3×5" piece of stiff cardboard. Then attach a strip of magnetic tape to the card's back. Whenever you loosen the blade, slap the sign onto some conspicuous spot on the saw—the blade guide, for instance.

—Dick Rentfrow, Raleigh, N.C.

Tin-can organizers store stuff and tote it, too

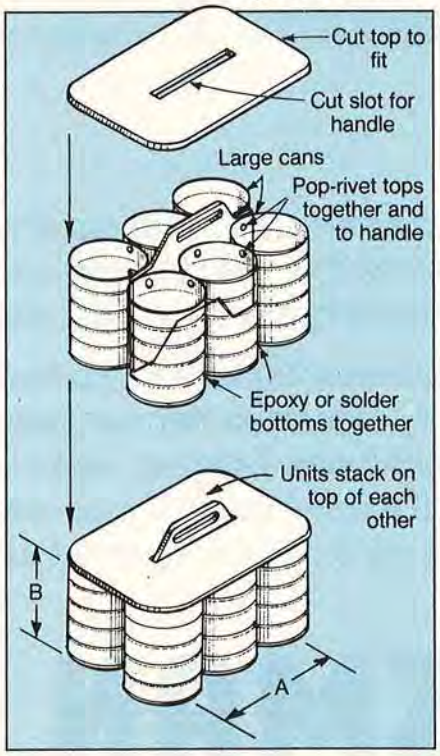
You've organized your screws, nails, and other hardware into cans. But they don't stack neatly, and you can only carry a couple at a time.

TIP: Assemble those cans into stackable, totable six-packs, as shown *right*. Begin by connecting six same-sized cans into two rows of three (coffee cans or other large cans work best). Join them near the tops with ⅛"-long pop rivets; solder the bottoms together, or glue them with epoxy.

Next, measure your assembled cans to determine dimensions A and B. Set dimension C equal to ⅔ of A, and dimension D equal to ¾ of A. Make dimension E equal to ½ of B. Now, cut the handle from ¼" hardboard. Cut a carrying slot where shown. Attach a can assembly to each side of the handle with ½"-long pop rivets.

To make a lid, place the completed organizer on top of another piece of ¼"-thick hardboard, and draw a round-cornered rectangle around it. Center a 5/16"-wide slot about 1/16" longer than dimension D on the lid. Cut out the lid and the slot with a scrollsaw.

—Thomas O'Donovan, Highland Park, Ill.



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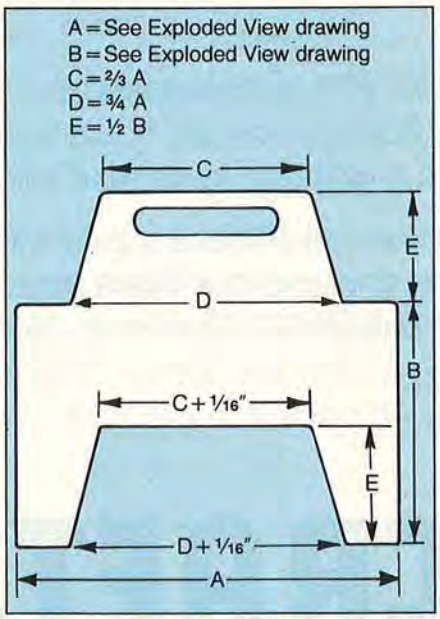

Continued on page 15

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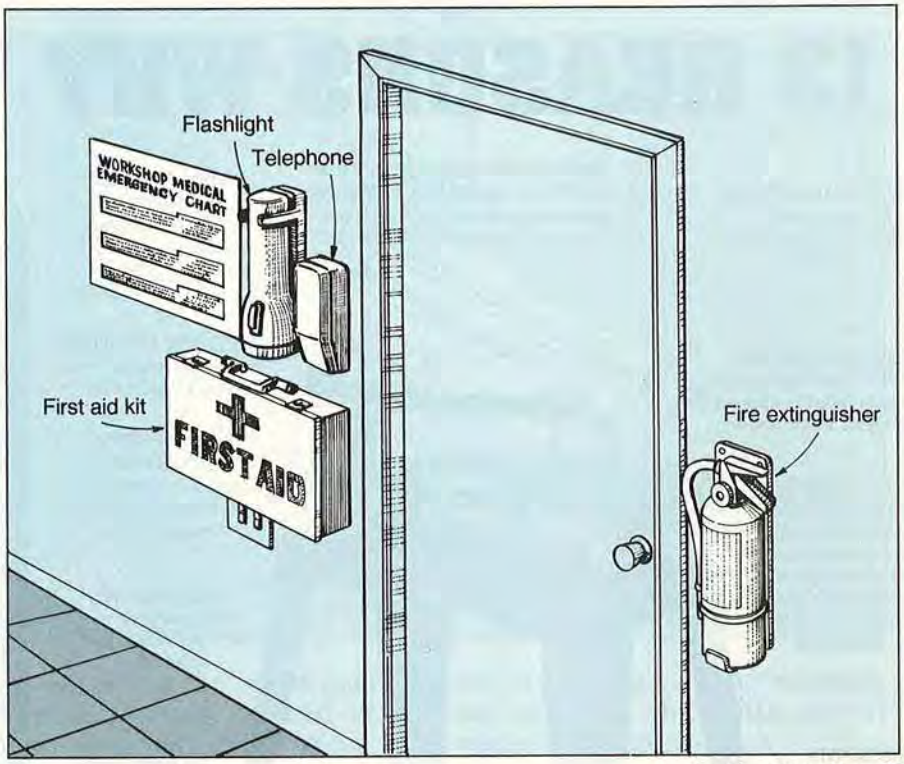
Continued from page 12

Gather safety equipment around the workshop door

No shop should be without a first-aid kit and a fire extinguisher. But they're useless if you, or those who might help you in an emergency, can't find them quickly.

TIP: Mount your first-aid kit and fire extinguisher where you'll see them every time you enter and leave the shop—right next to the main entrance. Keep a flashlight with the safety equipment, too, in case a power failure leaves you in the dark. And if a fire could prevent you from reaching the main entrance or trap you in a corner, install one or more additional fire extinguishers throughout the shop. In the *WOOD*® magazine IDEA SHOP™, we also have a phone by the door, along with a list of emergency numbers.

—WOOD *magazine's IDEA SHOP*



Continued on page 17

WHY BUY JET

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SPINDLE SPEEDS	550-3000 RPM	500-2000 RPM
PRICE— Comparably Equipped	$689.00*	$724.55**
NET WEIGHT	183	159
BED WAY WIDTH	5"	4"
WARRANTY	2 YEAR	2 YEAR
HEAD ROTATION FOR OUTBOARD TURNING	One step Quick release No tools required	Multiple steps Tools required

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*JET Suggested Retail Price 2-92
**DELTA Suggested Retail Price [illegible]

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–Wood Mag. Sept. 91–

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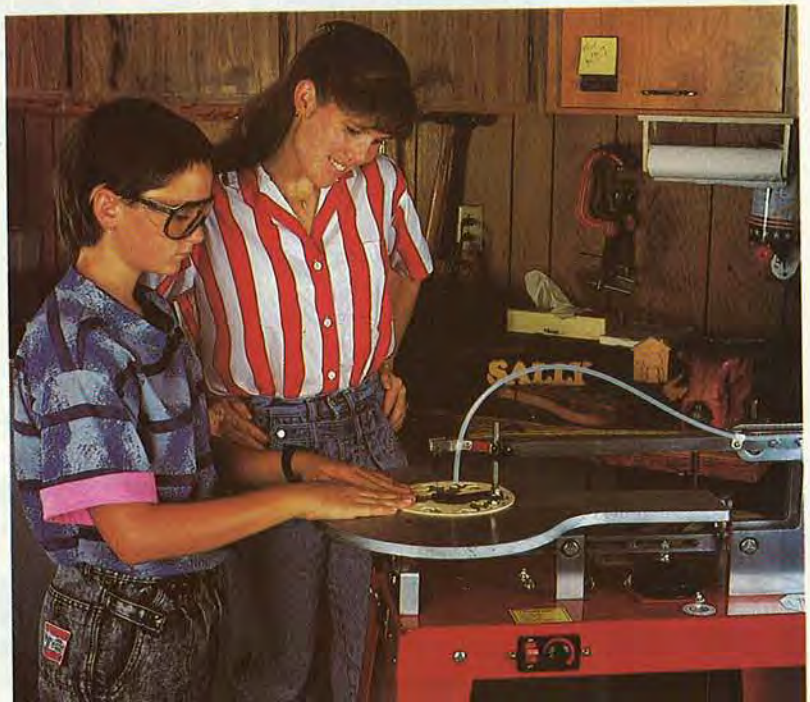

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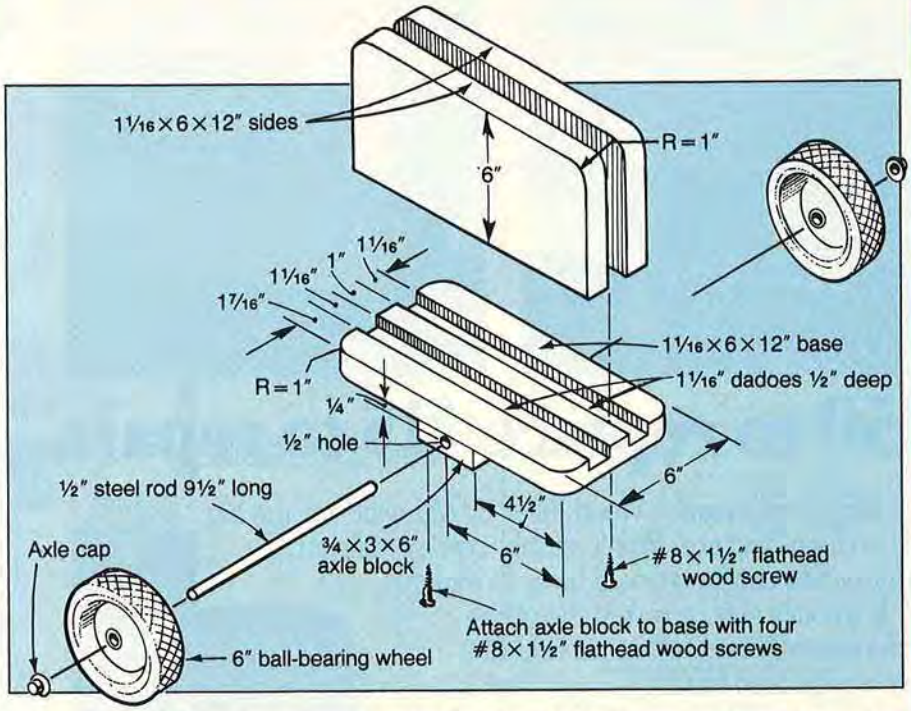
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 15

A two-wheel deal hauls sheet goods

You've already clobbered two corners and an edge of a 4×8′ sheet of ¾″ plywood while trying to maneuver it through your shop. And you hate to think about what you've done to your back. Isn't there a better way to handle big, heavy sheets?

TIP: Roll those unwieldy goods around on a two-wheel dolly like the one shown *right*. Cut the body pieces to the sizes shown from 1⅛″-thick maple or other hardwood. Cut the dadoes in the base. Then, cut out the axle block and drill the ½″ hole through it as shown. Now assemble the sides, base, and axle block with screws and glue. Insert the axle in the hole, and slip on the wheels, securing them with axle caps. (Hardware stores sell the parts.)



To use, stand the sheet material on edge, and raise one end off the floor. Slide the dolly under the end, and move it toward the middle of the sheet. Then, balancing the sheet on the dolly, roll it where you need to go.

—WOOD® *magazine's IDEA SHOP*™

Continued on page 18

WHY BUY JET

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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 17

Big handle makes chuck key easy to use, hard to lose

You didn't get the drill-press chuck tight enough. You know this because the chuck keeps turning while your big hole cutter sits there motionless midway through the board you're drilling. You could tighten it up and get on with the job, but you don't see the chuck key that you laid down just a minute ago.

TIP: Cinch that chuck tight the first time by getting a better grip on the key. Drill a hole 1/64" smaller than the diameter of the chuck-key handle into a wooden file handle. Press it on, and presto—greater leverage! The larger handle also makes the elusive key easier to spot on a crowded bench.

—Jeff Vanden Boogart
Little Chute, Wis.

MORE TIPS FROM OUR WOODWORKING PROS

- Regular lumberyard stock for projects? You bet! Read how we selected and cut 2×10s to build our workbench. It's all on *page 64*.
- Chiseling mortises can get you down. To save yourself some effort, see *page 66* for another approach to mortising. You'll find out how we made neat mortises on our workbench legs with mating dadoes.
- Have you ever wanted to make some special cutting tool for turning or carving? Our advice on *page 55* will help you grind and heat-treat tools of your own design.

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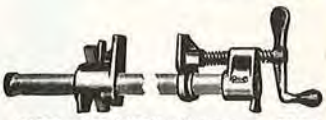

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TOOL-INDUSTRY INSIDER

SOME BIG CHANGES BREWING FOR DeWALT TOOLS

Print this article

From now on, the name DeWalt stands for portable tools, not radial-arm saws.

For many years the name DeWalt has meant one thing to woodworkers: radial-arm saws. Now, officials at Black & Decker, the company that owns the DeWalt brand name, have decided to go out of the stationary-machine business for the most part. So it's "goodbye" DeWalt radial-arm saws. But, the company is not dropping the DeWalt name. Instead, B&D has affixed the DeWalt brand name to its line of professional portable power tools. And to make their products stand out from competitors, officials at B&D have decided to change the color of the housings from gray to yellow.

Why the changes? According to company representatives, two factors led to this major marketing decision. First, B&D decided to discontinue marketing most stationary tools because sales of stationary machines have amounted to less than 1 percent of the company's total revenues. For a corporation that deals in huge volumes, DeWalt saws were small potatoes. (DeWalt radial-arm saws will still be available in Europe.)

The reason for dropping the B&D Professional label and substituting DeWalt Industrial in its place has its roots in a widespread misperception about the quality of Black & Decker tools. Because the company widely markets low-priced tools to the general public, as well as toasters, coffeemakers, and other inexpensive appliances, consumers tend to associate the Black & Decker name with low-priced goods. However, as our testing in the *WOOD*® magazine shop has indicated, Black & Decker's professional-brand tools consistently perform on a par with other high-quality brands.

Weary of battling the misperceptions, company officials are taking a new tack. Because the name DeWalt has long stood for quality and reliability, B&D officials decided that it would be the best brand for marketing the company's top tools. Since B&D already has another line of professional-level tools—Elu—we wondered what effect the switch would have on this brand. (Elu tools also have come up winners in *WOOD* magazine tool tests.) "Very little," a B&D representative told us. "The Elu and DeWalt Industrial brands will have only one tool in common, a ¼-sheet finishing sander."

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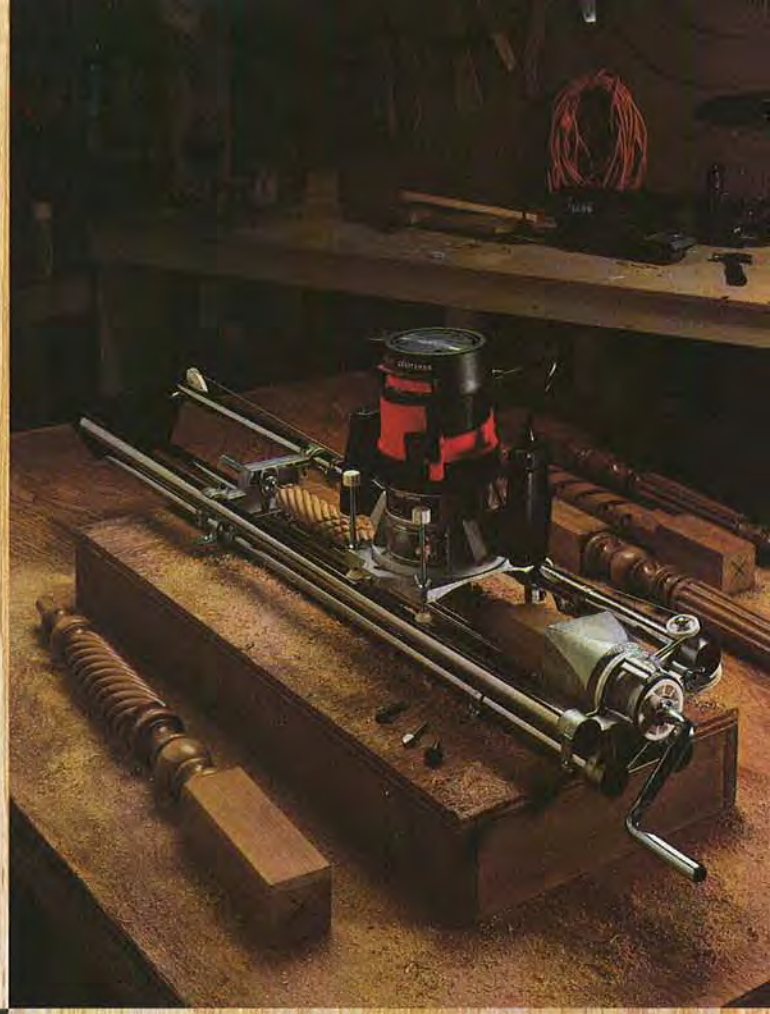

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PRODUCTS THAT PEFORM

Print this article

Corner chisel helps you clean up shallow mortises

Armed with a router, straight bit, and hinge-mortise template, you can quickly cut flat, precise hinge mortises. But, you still need a way to clean up the round corners produced by the straight bit. The Porter-Cable corner chisel helped me get the job done in no time with excellent results.

To use this cleverly designed tool, you simply nestle it into the rounded corner of the mortise and lightly strike it with a hammer. The tool has a spring-loaded frame that protects the chisel's cutting edge when not in use. In my tests, the hardened edge held its sharpness well.

The tool does have a couple of limitations. The mortise must be at least 1″ wide on each side of the corner, and in my tests the chisel cuts well only on mortises no deeper than 3⁄16″.

—Tested by Steve Oswalt

Porter-Cable corner chisel, $20.50 plus postage from Garrett Wade, 161 Avenue of the Americas, New York, NY 10013. Call 800/221-2942 or 212/807-1155.

Continued on page 26

A Band Saw Special You Won't Want To Miss

Buy an Inca Model 340 Band Saw at a special low price and you'll get Mark Duginske's *Band Saw Handbook*, 2 blades, and a set of Cool Blocks® *FREE*. And, with any order from this ad you'll get our 224 page tool Catalog *FREE*.

We've brought in a special shipment of Inca's famous Model 340 Direct-Drive 10½" Band Saw. This unique machine has a ¾ HP continuous duty motor, fully balanced wheels, and unquestionably the best blade guide system available on any medium sized band saw – at any price.

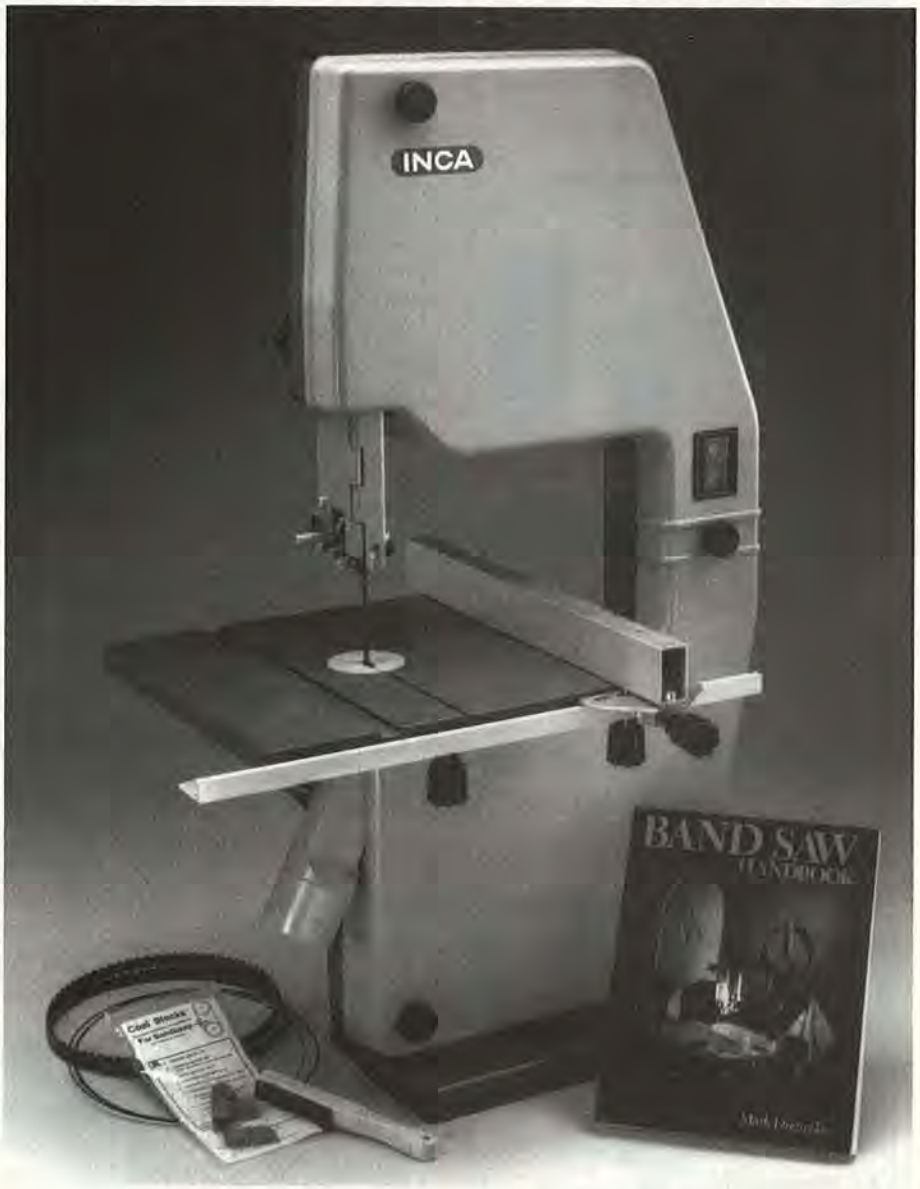
This blade guide system (the heart of any band saw) enables the Model 340 to accurately track blades as fine as our 1/16" 24T scroll blades (use Cool Blocks®), or as heavy as a ½" 3T resaw blade.

Comes with a Rip Fence as standard equipment. The 340 mounts easily on any sturdy table (we can also provide good stand plans). Its relatively light weight (about 70 lbs) and the direct mounted motor also make it entirely portable if desired.

The Regular Price for the Model 340 is $795. While these special quantities last, you can get one for only $695. Shipping is a flat $25 to anywhere in the 48 states. (Inquire about HI and AK.)

As an added dividend, we'll send you the book, the Cool Blocks®, a ¼" and a ½" blade, (a $50 value) absolutely *FREE* with your order.

		Regular	*Sale*
340	Inca 10½" Band Saw	$795.00	$695.00



Five Things That Will Improve The Performance Of Any Band Saw

If you already own a band saw that you're devoted to, here are some products that will help make it perform better than ever.

Band Saw Handbook *by Mark Duginske*
Learn what makes your band saw tick. Tune-up and maintenance, blade selection, tracking and tensioning. Hundreds of tips and shortcuts. Unlock your saw's potential.

16L04.02 Band Saw Handbook $16.95

Super Narrow 1/16" Scroll Cutting Bandsaw Blades Increase Your Saw's Versatility

You may have never seen a blade like this. A 24 tpi raker style, it produces smooth cuts while making incredibly tight turns. We recommend using our Cool Blocks® blade guides with these delicate blades, since they can be set closer to the blade without danger of overheating.

Extra Smooth Cutting Cabinetmaker's Bandsaw Blades

A Garrett Wade exclusive. They look like regular raker blades but are actually ETS (Every Tooth Set) – a design normally available only on production blades. The result is a very smooth cutting blade that feeds easily. ¼" blade is for general work, and the ½" for resawing and heavy straight sawing.

93½" Blades (Delta 14" and copies)

33K11.01	1/16" 24 tpi Scroll	$15.95
33K11.04	1/8" 14 tpi Scroll	$14.95
33K11.02	¼" 4 tpi Cabinet	$11.95
33K11.03	½" 3 tpi Cabinet	$12.95

80" Blades (Sears 12")

33K12.01	1/16" 24 tpi Scroll	$14.95
33K12.04	1/8" 14 tpi Scroll	$13.75
33K12.02	¼" 4 tpi Cabinet	$10.95
33K12.03	½" 3 tpi Cabinet	$11.95

72" Blades (Shopsmith)

33K13.01	1/16" 24 tpi Scroll	$13.40
33K13.04	1/8" 14 tpi Scroll	$12.50
33K13.02	¼" 4 tpi Cabinet	$10.25
33K13.03	½" 3 tpi Cabinet	$10.95

Unique Cool Blocks® Saw Guides Prolong Blade Life & Increase Accuracy

Made of a special graphite-impregnated phenolic laminate, the set of 4 blocks replaces your saw's upper and lower side blade guides. Cool Blocks® run cooler and are more slippery than conventional steel guides, and give you better control since they can be set actually touching the blade.

33K09.01	A	Delta 14"	$11.95
33K09.02	B	Sears 12" (⅜" square)	$11.95
33K09.04	D	Shopsmith	$12.95
33K09.05	E	Old Sears (¼" round)	$11.95
33K09.06	F	Jet 14" (& Delta copies)	$11.95
33K09.07	G	Old Sears (5/16" round)	$11.95
33K09.20	K	New Tilt Head Sears	$16.95

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The very best blades used to always have their backs slightly rounded at the factory – a step that is no longer done because of its cost. But now you can do it for yourself using this special paddle-mounted, dry stone. Take the sharp edge off the back and see your blade "sing" around curves.

38M01.01 Tuning Stone $9.95

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PRODUCTS THAT PERFORM

Continued from page 24

Cutters eliminate ring around the plug

The concept behind Snug-Plug Cutters is so simple, and the product's results so impressive, that I'm surprised that it has taken so long for this product to hit the woodworking market. Unlike other plug cutters that produce cylinder-shaped plugs with perpendicular walls, the Veritas Snug-Plug Cutters yield plugs with slightly tapered walls (just 1½°). Because of this feature, the plugs fit like a cork in a bottle, even if you drill a hole oversized by 1/64".

In my tests, the tapered plugs filled their holes as tight as possible after I glued and tapped them into place. And, the cork-like shape helped me control the grain orientation of the plugs as I inserted them. Because of these attributes, the plugs produced an almost-nonexistant ring after I sanded them flush.

I also found that it helped to countersink the screw holes with Forstner bits. Because of the scoring action of a Forstner bit's rim, it produces an exceptionally clean hole. Whenever possible, I recommend that you use a drill press for best results when cutting the plugs and their holes.

—Tested by Jim Downing

Veritas Snug-Plug Cutters, $29.95 plus postage for a set of three (¼", ⅜", and ½" sizes), from Garrett Wade, 161 Avenue of the Americas, New York, NY 10013. Call 800/221-2942 or 212/807-1155.

Goof-proof water-based stains and pickling gels

How would you like to try a pigmented finish that's nontoxic, low-odor, fast-drying, and cleans up in a jiffy? Home Decor stains, pickling gels, base coats, and antiquing gels tout all of these wonderful features, and after trying them in my shop, I have to say these products impressed me.

Each finish applied effortlessly with a brush or rag, and dried within 20 minutes. No matter which finish I experimented with, my projects turned out beautifully and without a hint of grain fuzzing (a problem with some water-based stains). Here's what I found out about the different products.

For an instant aging effect, I spread on the base coat before applying the antiquing gels on some new projects. Because of the gels' consistency, the products didn't drip and I was able to control the coverage and degree of aging.

The pickling gels come in 14 colors designed for bare wood. I tried the rose pink gel and achieved just the right amount of coverage in one coat. I had earlier tried a competitor's pink stain, and even after six coats, I hadn't achieved the results I needed.

You can buy the stains in liquid or gel form and in eight colors. The liquid stains work fine and cost a little less, but the gels cover better, and bring out the wood grain more prominently.

—Tested by Bob McFarlin

Home Decor finishes by Delta Technical Coatings, $1.99 for 2 oz., $4.99 for 8 oz., and $7.59 per pint for gel products (liquid finishes cost slightly less). Available at craft and variety stores nationwide. Call 800/423-4135 for more information or the name of the dealer nearest you.

Continued on page 28

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Continued from page 26

Give your feet a break with this snappy floor mat

After an hour or so of standing on the hard, painted concrete floor of my workshop, my feet and legs grow fatigued. And with the ever-present fine layer of sawdust coating the smooth surface of the floor, things can get a little slippery underfoot. That's why I turned to the Snap-A-Matt floor system for a little help. After a thorough tryout, I'm glad I did.

The product consists of 12×12″ plastic "tiles" that interlock to fit a floor space of any size or shape. Each tile has flexible ridges that grip the soles of your shoes while providing a feel-good cushion. Sawdust falls between the ridges and easily cleans up when you vacuum the mat. To finish off the mat I designed, I just snapped the needed number of tapered edge pieces in place around the interlocked tiles. These make the transition between the floor and mat safe and smooth.

I found the Snap-A-Matt easy to assemble. It improved my footing greatly, and although it's not as cushioned as some foam-type mats, it also lessened the strain on my legs. Because of the tapered edges, I have never tripped on the mat or had difficulty rolling a mobile machine across it.

You can buy Snap-A-Matt in eight colors. And though I only used the mat in my workshop, the manufacturer points out that the product will also prevent slippage around pools, boats, and boat docks. And you can protect the bed of your pickup with it.

—Tested by Bill Krier

Snap-A-Matt, about $3 per square foot at hardware stores in the U.S. and Canada. Tapered edges cost approximately $2.10 each. For a dealer near you, call 800/361-7350.

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900 CFM Dust Collector:
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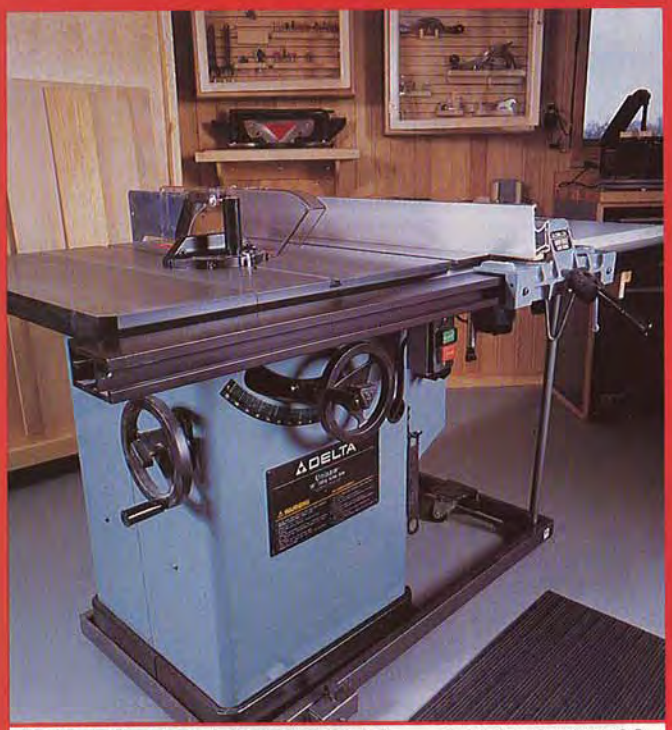

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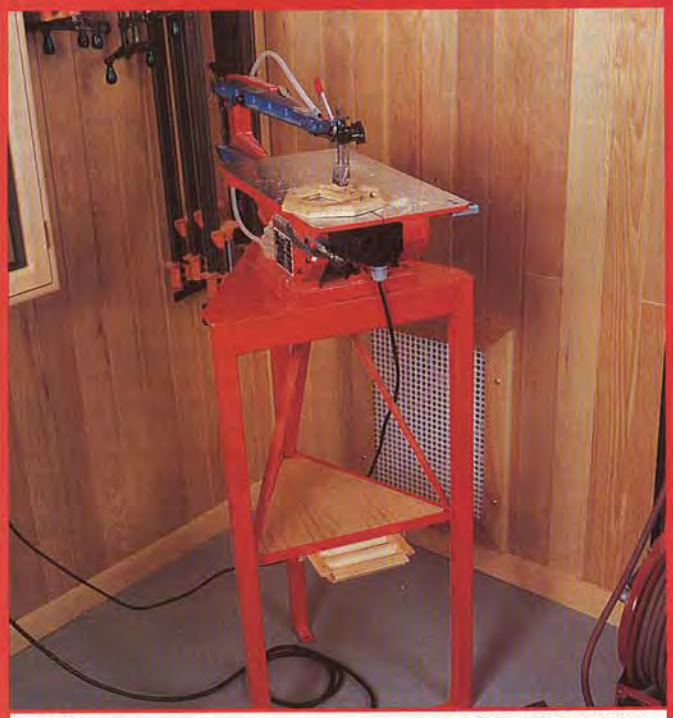

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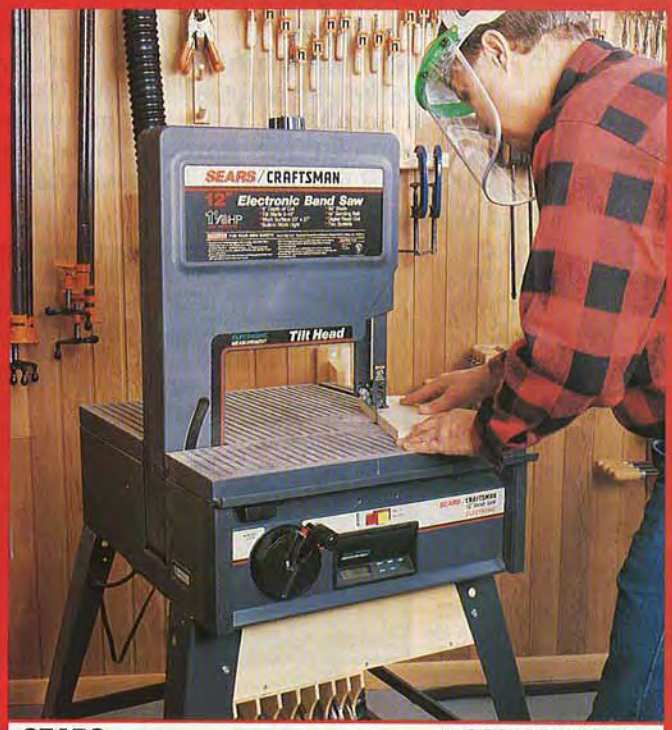

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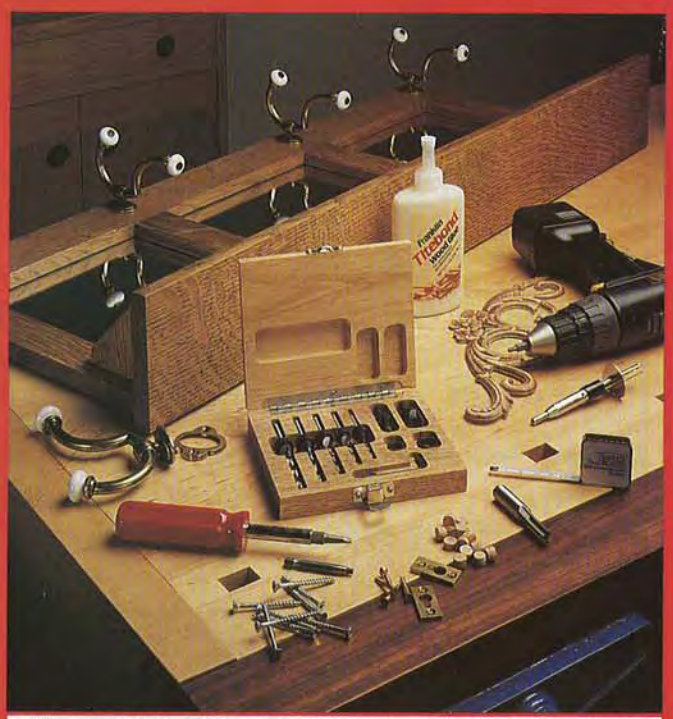

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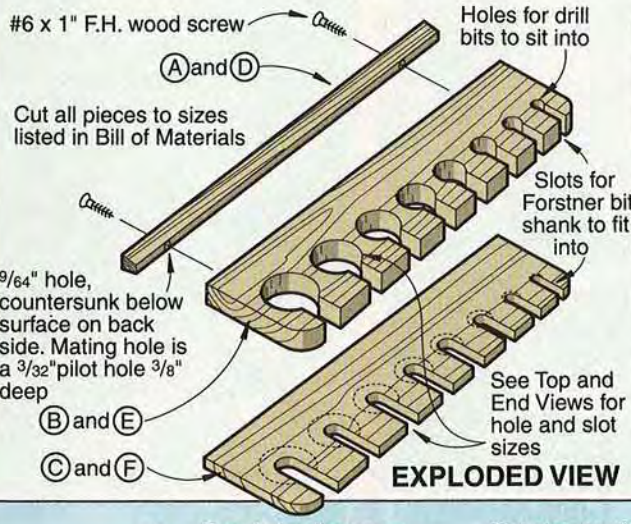
FORSTNER BIT HOLDERS FOR THE DRILL-PRESS CABINET

Here's a handy pair of holders to fit inside our universal wall-cabinet system shown on *page 74*. To make each holder, bevel-rip the dovetail strips (A, D) to size. Next, cut the top and bottom shelf pieces (B, C and E, F) to size and shape for each holder. Bore the holes in each top piece (B and E). Laminate the mating pieces together for each holder. Cut the slots for the bit shank with a bandsaw or scrollsaw. Drill the mounting holes through the dovetail strips, and glue and screw them to the back edge of each laminated shelf.


#6 x 1" F.H. wood screw
A and D
Cut all pieces to sizes listed in Bill of Materials
9/64" hole, countersunk below surface on back side. Mating hole is a 3/32" pilot hole 3/8" deep
B and E
C and F
Holes for drill bits to sit into
Slots for Forstner bit shank to fit into
See Top and End Views for hole and slot sizes

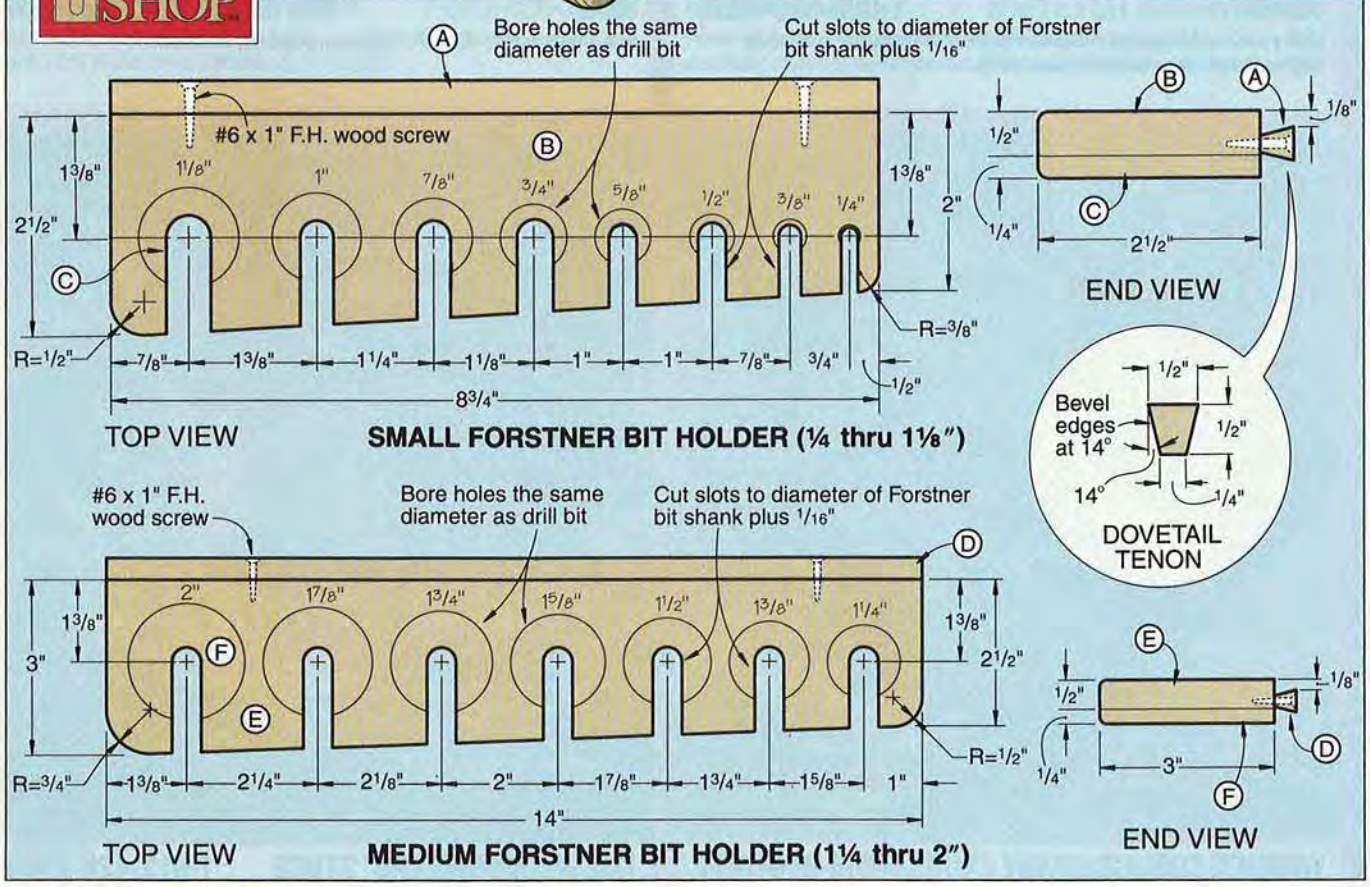
EXPLODED VIEW

Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
A	½"	½"	8¾"	maple	1
B	½"	2½"	8¾"	maple	1
C	¼"	2½"	8¾"	maple	1
D	½"	½"	14"	maple	1
E	½"	3"	14"	maple	1
F	¼"	3"	14"	maple	1

Supplies: #6×¾" F.H. wood screws, finish.

WOOD magazine's IDEA SHOP



Project Design: Jim Boelling Illustrations: Kim Downing

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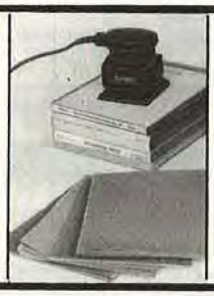
19"x48"	$ 7.90 ea.	$11.09 ea.	$11.45 ea.	$12.00 ea.
24"x60"	11.33	16.37	16.94	17.81
25"x60"	11.80	17.05	17.65	18.55
25"x75"	13.56	20.13	20.88	22.00
36"x75"	19.53	28.98	30.06	31.68
37"x60"	17.46	25.23	26.12	27.45
37"x75"	20.07	29.79	30.90	32.56
50"x103"	33.71	51.73	53.79	56.88
52"x75"	28.21	41.86	43.42	45.76

(WIDE BELTS Not Included in Special Offer)



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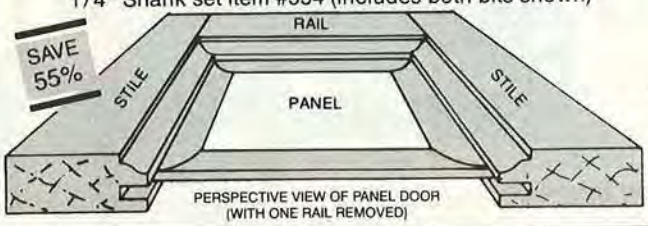
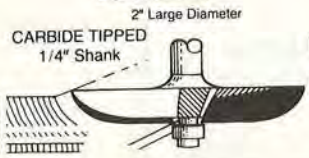


PERSPECTIVE VIEW OF PANEL DOOR (WITH ONE RAIL REMOVED)

RAISED PANEL BIT SUPPLIED WITH BALL BEARING



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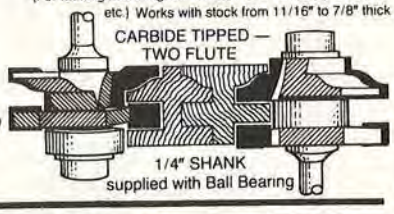

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ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#601	Solid Carbide	1/8" **Spiral Cutter**	*Proper Adaptor Will Be Supplied	1/8"	1/2"	1/4" *	$ 9.00
#603		1/4" Spiral Cutter		1/4"	3/4"	1/4"	$12.00
#903		1/4" Spiral Cutter		1/4"	3/4"	1/2" *	$12.00
#904		3/8" Spiral Cutter		3/8"	1"	1/2" *	$24.00
#905		1/2" Spiral Cutter		1/2"	1 1/2"	1/2"	$29.00
#530		3/16" **Edge Beading**	3/16" Dia. of Circle		1/2"	1/4"	$15.00
#531		5/16" Edge Beading	5/16" Dia. of Circle		1/2"	1/4"	$15.50
#350		1/8" **Round Over**	1/8" R	3/4"	3/8"	1/4"	$11.00
#351		3/16" Round Over	3/16" R	7/8"	1/2"	1/4"	$11.00
#230		1/4" Round Over	1/4" R	1"	1/2"	1/4"	$12.00
#353		5/16" Round Over	5/16" R	1 1/8"	1/2"	1/4"	$14.00
#209		3/8" Round Over	3/8" R	1 1/4"	5/8"	1/4"	$15.00
#355		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#655		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/2"	$17.00
#656		3/4" Round Over	3/4" R	2"	7/8"	1/2"	$21.00
#199		**Multiform Moulding**	Unlimited Patterns	2 1/4"	2"	1/2"	$40.00
#205		1/4" **Cove**	1/4" R	1"	1/2"	1/4"	$12.00
#206		3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	$13.00
#207		1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	$14.00
#643		1/2" Cove	1/2" R	1 1/2"	5/8"	1/2"	$15.00
#208		3/4" Cove	3/4" R	1 7/8"	3/4"	1/2"	$26.00
#231		5/32" **Roman Ogee**	5/32" R	1 1/4"	15/32"	1/4"	$16.00
#232		1/4" Roman Ogee	1/4" R	1 1/2"	3/4"	1/4"	$17.00
#506		1/2" **Pattern**	Flush Trim	1/2"	1"	1/4"	$15.00
#508		3/4" Pattern	Flush Trim	3/4"	1"	1/4"	$17.00
#366		1/8" **Slot Cutter**	3/8" Deep	1 1/4"	1/8"	1/4"	$14.00
#368		1/4" Slot Cutter	3/8" Deep	1 1/4"	1/4"	1/4"	$14.00
#204		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/4"	$13.00
#670		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/2"	$14.00

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#211		3/8" **Core Box**	round nose	3/8"	3/8"	1/4"	$10.00
#212		1/2" Core Box	round nose	1/2"	11/32"	1/4"	$13.00
#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	$15.00
#213		1" Core Box	round nose	1"	3/4"	1/2"	$17.00
#548		**Lockmitre**		2"	7/8"	1/4"	$32.00
#214		1/4" **Straight**	plunge cutting	1/4"	3/4"	1/4"	$ 6.50
#216		3/8" Straight	plunge cutting	3/8"	1"	1/4"	$ 6.50
#474		1/2" Straight	plunge cutting	1/2"	1"	1/4"	$ 7.00
#219		3/4" Straight	plunge cutting	3/4"	1"	1/4"	$ 9.50
#779		3/4" Straight	plunge cutting	3/4"	1 1/2"	1/2"	$10.00
#462		1/2" **Bull Nose**	1/2" Dia. of Circle		3/4"	1/4"	$16.00
#464		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/4"	$21.00
#764		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/2"	$21.00
#545		**Tongue & Groove**	Straight	1 5/8"	1"	1/4"	$29.00
#845		Tongue & Groove	Straight	1 5/8"	1"	1/2"	$29.00
#546		Tongue & Groove	Wedge	1 3/16"	1"	1/4"	$29.00
#846		Tongue & Groove	Wedge	1 5/8"	1"	1/2"	$29.00
#450		1/8" **Beading**	1/8" R	3/4"	3/8"	1/4"	$11.00
#233		1/4" Beading	1/4" R	1"	1/2"	1/4"	$13.00
#454		3/8" Beading	3/8" R	1 1/4"	5/8"	1/4"	$15.50
#455		1/2" Beading	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#500		3/8" **Flush**	**Trimming**	3/8"	1/2"	1/4"	$ 7.00
#501		3/8" Flush	**Trimming**	3/8"	1"	1/4"	$ 7.50
#503		1/2" Flush	Trimming	1/2"	1"	1/4"	$ 8.50
#221		1/2" Flush	Trimming	1/2"	1 3/16"	1/2"	$ 8.00
#558		**Thumbnail**		1 3/16"	3/8"	1/4"	$18.50
#858		Thumbnail		2 1/2"	3/4"	1/2"	$35.00
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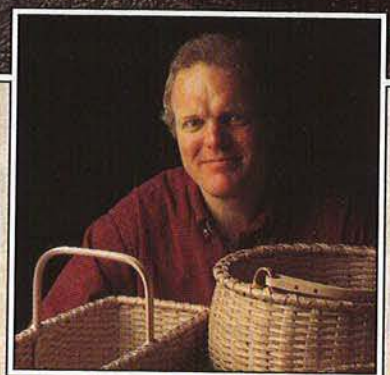
SPLIT-ASH BASKETS

MAINE STYLE



Baskets by Stephen Zeh, *from rear*, 18″ dia. bushel corn basket; covered feather basket, 10″ dia.; covered swing-handle, 10″ dia.; tea, 7″ long; potato baskets, 3″ dia.; French bread, 7″ long; mini swing-handle, 1¼″ dia.

Wood-wise craftsman Stephen Zeh really knows how to make the most of a tree, as long as it's brown ash.

Continued

SPLIT-ASH BASKETS

Print this article

Stephen Zeh with a sturdy pack basket he wove from splints.

In Maine, it's plain that there's only one tree suited for baskets—that's brown ash. And don't try to convince a Mainer otherwise. Even citing the botanical fact that their basket tree is truly black ash, *Fraxinus nigra*, does no good. "Maybe," they'll reply, "but around here, we don't use black ash for baskets."

At age 40 the most acclaimed of his state's basketmakers, Stephen Zeh of Temple, Maine, recalls how he learned the difference. "Eddie Newell, the Penobscot Indian who taught me how to make baskets, said that black ash grows where it doesn't get its feet wet. That's why black ash isn't good for baskets. It's not wet enough."

Walking through a leafless woodland just over the ridge from his home and shop, Stephen continues his explanation. "On the other hand, brown ash likes it wet. Botanically, they may be the same species, but there's definitely a difference—inside. Brown ash has so much water that even way down in the heartwood it will squirt out when you pound it. It's like the watermelon of wood."

Pursuing the basket tree

Stephen doesn't count the days and hours he spends searching for the right trees in his baskets' construction time. Otherwise, the retail price would soar way beyond what the market would bear.

"On the average, I'll only find one brown ash tree in 100 that will do," says the ruddy-faced woodsman, sweeping his arm toward a stand of trees in a bog. "Here, there are about 15 brown ash, and with luck, I think three will be good basket trees. There are very few brown ash at all in the whole town [township], which is 36 square miles of hills."

In an effort to cool off, Stephen tips back his wool plaid cap and unzips his jacket. "You can't just glance at a map and expect to find where the brown ash grows—you have to walk in.

"When I do find some brown ash, I look for certain things," he continues. "A good basket tree will be straight, free of any knots and twists, and vigorous growing. To tell that, I check the top. Thick branches mean it's healthy."

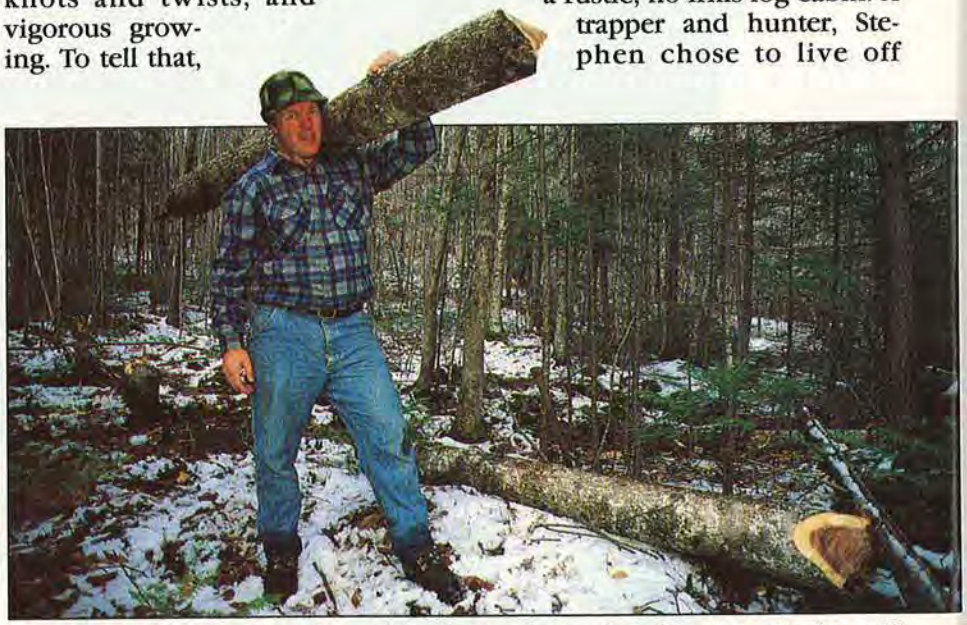
When a brown ash passes Stephen's brief examination, he brings out a hammer and chisel, *below left*. "I chisel a small notch in the tree to check the growth rings. They're what I use for basket splints," he explains. "I inspect the rings for consistency and thickness. Fast-growing trees have wider rings and make thicker, better splints."

As his chisel bites through the bark and into the wood, Stephen says. "Once, I chiseled into a tree, then cut it down and took it home only to find a strange dark spot when I was stripping splints." Stephen then explains how he later learned that another had eyed the same tree some 20 years before, a well-known Micmac Indian basketmaker named Joe Knockwood. "But it wasn't quite right then."

From trapline to baskets

Despite the growing fame of his traditional Maine baskets, Stephen remains unassuming. He nostalgically remembers the years near North Anson, Maine, when he and Tammy, his wife, shared a rustic, no-frills log cabin. A trapper and hunter, Stephen chose to live off

After finding a good-looking basket tree in the forest, Stephen chisels a notch in it to check the growth rings' thickness.



The first 8–10' of a brown ash provides the toughest splints. In a year, Stephen will use 30–50 of such trees, each hand-carried from the woods on his shoulders to the truck, dragged out by horse, or pulled by snowmobile.

the land, working hard in often unfriendly weather. In even the best years he would net less than $10,000 for his fox, beaver, and coyote pelts. Yet, it was the outdoorsman's life in the forest that led him to basketmaking.

New Englanders have always relied on their traditional splint-woven, open-topped pack baskets rather than backpacks or rucksacks to carry their gear afield. Stephen was no exception.

"I carried a pack basket to tend my trapline," he explains, "but the ones available at sporting-goods stores just wouldn't hold up. They were made of sawed splints or veneer—cut across the grain so they were weaker." Because old-timers had taught him to trap, he again turned to them to learn basketmaking. "Eddie Newell showed me how to select the right tree, pound it into strips, and weave with the splints in the way of his people."

Now, a dozen years later, Stephen's baskets command attention—and top dollar—for their design, detail, and craftsmanship. For instance, his large Maine potato basket, measuring 8" in diameter and 9" high, sells for about $1,400. The pack baskets he improved carry price tags of $975 to $1,600, depending on the size.

Stephen says that part of the appeal for his baskets rests in their design. "My baskets follow the traditional shapes. They're based on old forms and styles used in Maine, but they're all my own designs, according to what I see the basket should be." Beyond beauty, buyers also marvel over their tough, woven sturdiness.

"The key is the materials—pounded and hand-split ash so that all parts of the basket follow the grain of the wood," he explains. "I've taken the tree apart year by year, layer by layer, the actual way that it grew rather than slicing and shaving the wood to cut through the grain. Doing it like that preserves the natural strength and durability of the ash."

How to peel a basket tree

Stephen, 6′ 2" and 220 pounds, normally hauls his ash trunks out of the woods one at a time, on his shoulder. Of course, the brown ash he harvests tends to be small, rarely more than 50 years old, and 15" in diameter at the base. And he only uses the first 8′ or so, where the wood grows toughest. Still, delivering the log home marks only the first step in a long process, as shown *below.*

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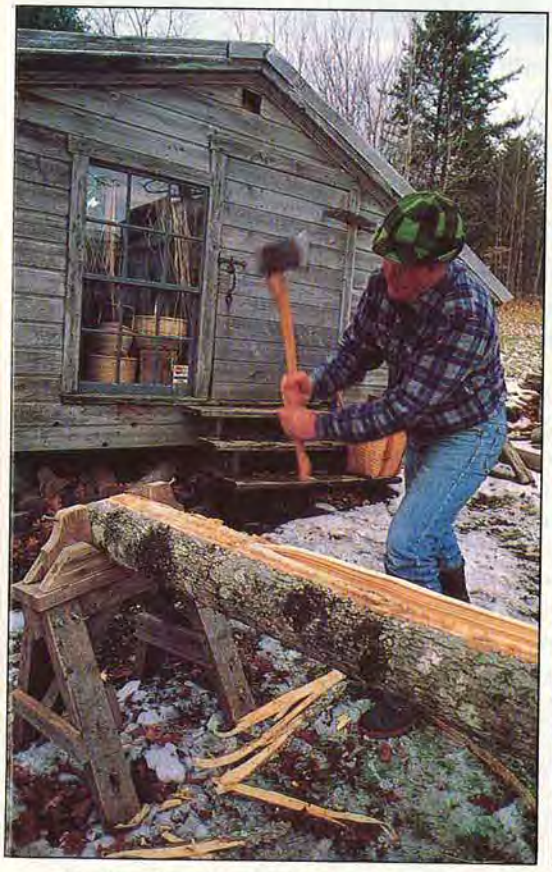


Stephen has ground off the sharp edges of the flat back of the ax head so as not to damage the splints as he pounds the log.

Before stripping off splints, the basketmaker marks their width at about 2" with incisions.

The growth rings peel off 5–6 at a time as separate splints about ⅛" to 1/32" thick. Stephen will use both sapwood and heartwood.

SPLIT-ASH BASKETS

Left. **Stephen scrapes ash splints clean so they'll weave more easily, but the process adds luster, too.** ***Above.*** **With the uprights in place on the mold, Tammy weaves a small basket. Each round Zeh basket begins with a kick-up bottom to distribute the load.**

Outside the shop, Stephen heaves his newly acquired log into its cradle of notched sawhorses. "If I leave the bark on, I can keep a log up to a year without it drying out much," he says, reaching for his drawknife. Then, with long, quick strokes, he peels a 6"-wide swath of the log's gray bark down its length.

"I only strip one narrow area at a time, gradually working my way around the log," Stephen says. Now, he picks up his ax and begins whacking the bare area with the blunt end of the ax head.

After 10 minutes of pounding, Stephen pauses, sweat streaking down his cheeks in rivulets. "The pounding breaks the growth rings apart—early wood from late wood," he says. "And the harder I hit it, the deeper the break goes through the layers." Thunk, thunk, thunk.

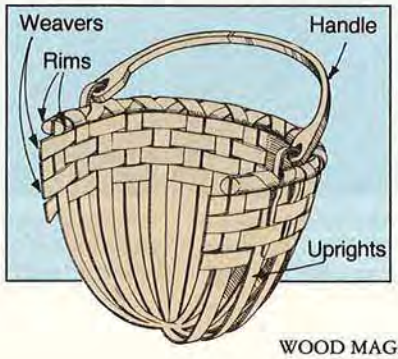
"I pull the splints as they come, following what the tree wants to do, not what I want to do," he notes. The splints gleam like satin ribbons as he separates them. Varying in thickness from 1/32" to 1/8", they seem as strong and flexible as strapping tape. "Wait until I scrape them, they'll really shine."

"For rims and handles, instead of pounding a log, I'll split it in half with a froe, then quarter it, then split out the heartwood," he explains. "Next, I'll put the heartwood in a vise and split it down further with a knife blade. When I shape the handles and rims on the shaving horse, I go with the grain, too. You see, I make weaving materials, and then I make handles and rims. They're not concurrent processes, because for handles and rims, I must work the wood green."

Baskets from the bottom up

Stephen gets a little more than 100 or so usable splints from a tree. It takes nearly 40 for a large basket, and 15 for a small one. That's counting the uprights and all the weavers.

Depending on the scale of the basket, the weavers range in width from 1/64" to 1/2"; the uprights, from 1/4" to 1". When he's ready to make a basket, Stephen wets the splints by soaking them, scrapes them clean with a knife, as shown in the photo *above left*, and then cuts them to the width needed. For this task he relies on what he calls a "gauge"—a home-



Above photos. **Stephen seats the solid ash inner rim, and then adds an outer rim to protect the top. Next, with stout, flexible splints, he tightly lashes the rims together and to the weavers.**

made device with small blades inserted comblike into one end of a short lath. In one, he's spaced the blades 1/32" apart, in another, 1/16", and so on. He pulls the full-width splints through the blades to "rip" them into the narrow strips he'll use for uprights and weavers in the baskets.

"The stronger the basket, the heavier the material required," says Stephen about selecting the correct splints. "The Indians, in their style, used thinner material."

Each of the 200–250 Zeh baskets made every year begins the same way. First, Stephen selects the specific mold. Every style of basket has its own mold made of laminated pine that he has turned to shape on a lathe. The mold holds the uprights in the correct shape until the weaving with the dampened splints is completed.

There's also a mold for the "kick-up" or raised bottom, a Zeh trademark. According to Stephen, this feature distributes the basket's load. And, of course, it's at the bottom that a basket begins.

Stephen weaves the tapered uprights together by crossing them like the spokes of a wheel and then anchoring them with a tightly pulled loop of fine splint. From the bottom, the basket slowly takes shape as the splints are woven under and over the uprights, as Tammy is doing in the photo *above left*. When the sides have been completed, he allows the basket to dry out for a couple of weeks. The drying also pulls the materials even more together.

Finally, he fits the dry basket with a hand-bent, solid ash rim, then binds it in place with the very toughest and smoothest splint that he can find. On all baskets with handles, Stephen locks the handle into place by means of notches that fit the rim. Only with the handle fitted tightly will he complete the binding, as shown in the photos *above*.

Brown ash baskets receive no finish, although their surfaces softly shimmer. Even the subtle differences in color between sapwood splints and heartwood splints become more evident in the completed work. But the ash gradually darkens somewhat and develops a beautiful patina as it ages.

Looking up from the beginning of another basket, Stephen comments, "I figure that overall, counting making and preparing the materials, it averages about 36 hours to make a basket. Even the tiny ones take lots of time because the materials always remain in scale—the smaller the basket the smaller the splints." Admiring the satiny material in his hands, then softly rubbing it, he adds, "After all this time, it's still hard to believe that all this comes out of a tree that I haul from the woods."

Get a basket brochure

For an illustrated brochure and current price list, send $2 (U.S.) to: Stephen Zeh, P.O. Box 381, Temple, ME 04984. Phone 207/778-2351.

Written by Peter J. Stephano Photographs: Steve Uzzell

A NEW LOOK AT AN OLD FOLK ART

WHITTLING

In this hurry-up, fast-paced world of ours, it's nice to know that some things never change. Take whittling, for example. People have been having fun with this simple type of woodworking for lots of years—and for lots of good reasons. It's relaxing, easy to do, and oh, so satisfying. Come on and give it a try. You'll be glad you did.

Print this article

"Whittling is meaningless," Roald Tweet, *right,* maintains. And that's exactly what he loves about it.

A professor of English and composition at Augustana College in Rock Island, Illinois, he spends much of his day immersed in "meaning." To unwind, Roald picks up a stick and a knife, and makes chips. It's pure relaxation.

Nothing else in woodworking demands so little yet returns so much. A whittler isn't obligated to produce useful items—a little ornament or figure is enough. And a whittler doesn't need a shop or a workbench—a porch step works just fine. When you come down to it, all a whittler really needs are a knife, a piece of wood, and a little bit of free time.

Whittling off the woodpile

The wood Roald likes to whittle would be mere kindling to most people. He whittles what he finds—twigs and small branches.

"Since the growth rings are so close together in a small branch, the grain is dramatic," he explains. "Part of the fun, too, is that you discover the most interesting woods—woods you wouldn't ordinarily use."

Roald Tweet whittles a bird while visiting the *WOOD* magazine shop.

The whittling prof likes lilac for its subtle grain. And he enjoys cutting into magnolia and catalpa just because they're unusual. Actually, Roald will try anything. His favorite? Cherry.

Get yourself a sharp knife

Roald likes the long handle and short, stout blade of a standard bench-type carving knife for whittling. But any knife (even a pocketknife) with a sharp, sturdy blade and a handle that affords a good grip will do.

Don't use a dull knife. Accidents happen when you try to force a blunt blade through wood. As for handling the knife, anybody who has ever picked one up to do more than spread peanut butter probably knows the three basic whittling cuts instinctively.

- For rough-shaping, hold the stick in your left hand and the knife in your right (assuming you're right-handed), as shown in *Photo 1, opposite.* Push the knife downward and away from you, the way you did when you made pointed sticks as a kid.
- For finer shaping, make shorter cuts. Control the knife with your right hand, but push the blade with your left thumb as shown in *Photo 2.*
- For details or surface smoothing, switch to the paring cut shown in *Photo 3.* Place your right thumb at the top of the cut. Then, close your hand to pull the knife toward your thumb. Use this cut for maximum control.

Birds, whimmydiddles, and lots more

Roald doesn't give much thought to what he'll whittle. As often as not, he makes a bird. (His birds, full-sized drawings shown *opposite page,* are well known around the Augustana campus.) But, it could just as easily be a letter opener, weed pot, spoon, chain, whimmydiddle, or toothpick.

A whimmydiddle? You've probably seen one. That's the folk toy with 8 or 10 notches whittled along a stick. A smaller twig nailed to one end like a propeller spins whenever someone rubs another stick along the notches.

Whatever you decide to whittle, keep it simple. Avoid highly detailed forms. "Whittling should be relaxing. Don't concentrate too much on it, and don't worry about a pattern. Sketch some simple guidelines, and then just follow the wood," Roald says as he rounds one end of a branch for the top of a bird's head. "See how the color changes here?" he asks,

WOODWORKING THAT'S STRICTLY FOR FUN

1. Pare away wood quickly for roughing with this basic whittling stroke.

3. Use the paring cut for smoothing the surface or whittling details. Let the workpiece shield your thumb.

2. Push the blade with your thumb for a powerful, controlled cutting stroke as shown *right*.

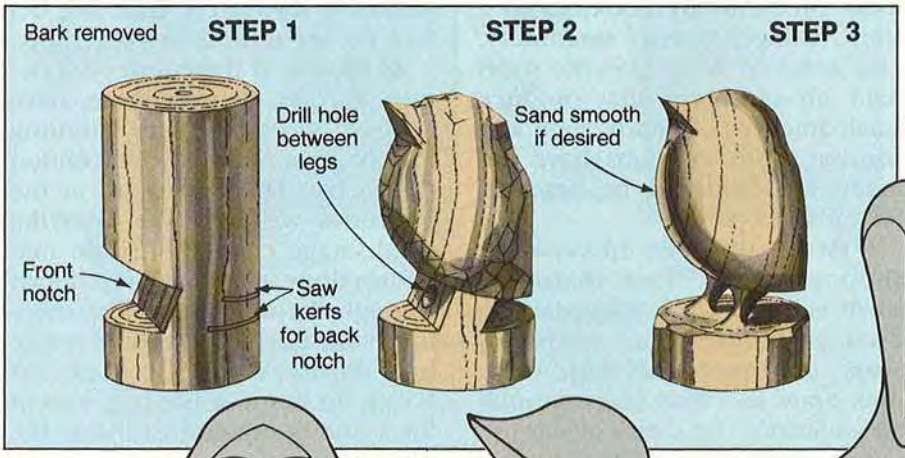
pointing to a hood shape formed where he has whittled down to the darker heartwood. "That will set off the head."

Rough out thin or fragile parts, such as a bird's legs, as you whittle, but save completing them for last. You can rely entirely on your knife or, like Roald, you can take advantage of other tools. He saws notches (shown *below, step 1*) and drills out wood (*step 2*) when forming legs for his birds, for example.

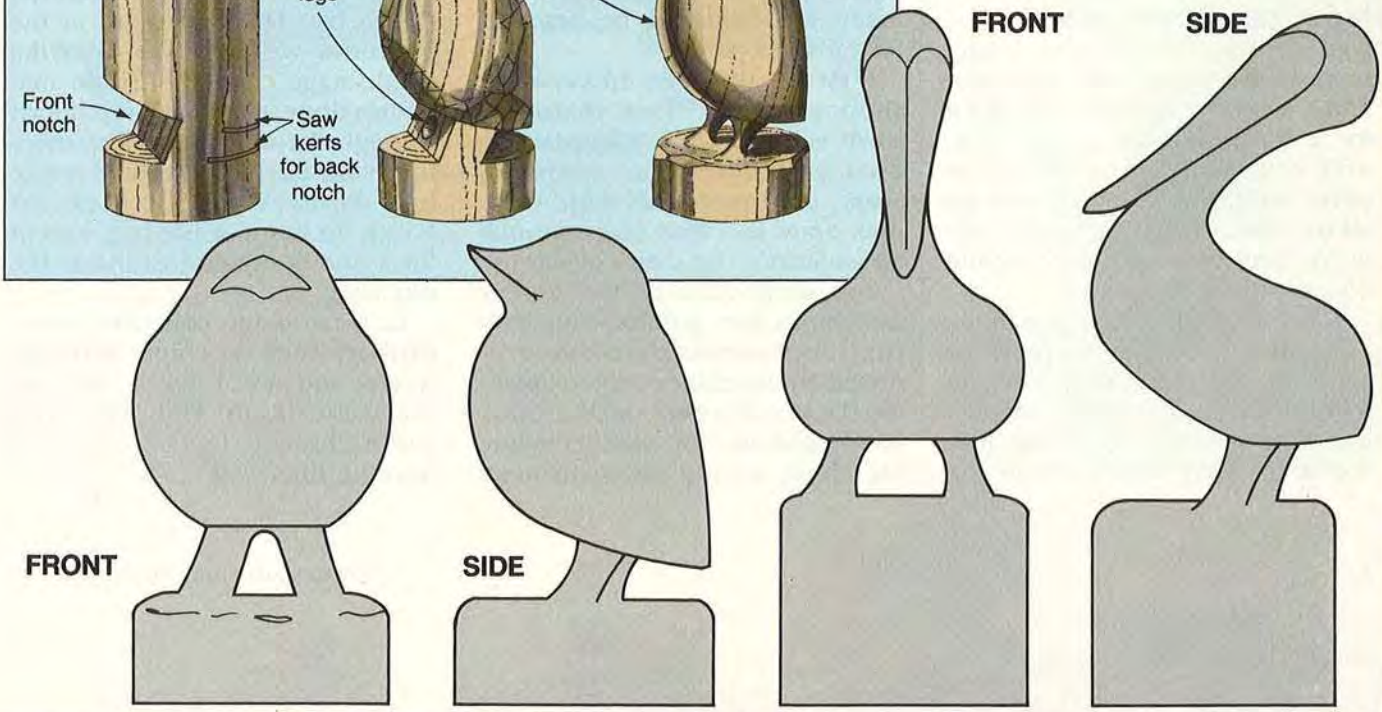
If you've whittled a keeper, burnish it by rubbing the surface with another piece of wood. (If you prefer a smooth surface, sand it first.) Roald finishes his pieces with clear rubbing oil.

Otherwise, just remember this: There are no bad whittlings, only small pieces of firewood.

Written by Larry Johnston
Photographs: Kay Danielson
Illustrations: Mike Henry; Jim Stevenson



FULL-SIZED PATTERNS



MEET THE DUST

WOOD® TESTS 11 AFFORDABLE

Show us a woodworker who doesn't have a problem with sawdust, and we'll show you a woodworker who owns a dust collector. With one of these debris gobblers, you can capture sawdust right at its source, before it has a chance to get into the air or spill onto the floor of your shop. To help you make a smart purchase, we tested 11 popular machines priced under $500. Here's what we found out.

Note: If you're interested in hooking up a dust collector to a whole-shop dust-collection system, we show you how on pages 40–45 *of the June 1991 issue of* WOOD *magazine.*

How a dust collector helps you defeat debris

Dust collectors for the home workshop cost between $250 and $500, which may seem like a lot for a machine that doesn't saw, drill, rout, joint, or mill wood in other ways. But, after you add up all the little things that a dust collector does, you may find buying one money well spent.

Why? Because when you hook up a dust collector via pipes or hoses to the collection ports on woodworking machines, sawdust has little chance of getting into the air of your shop or onto the floor. That saves you time cleaning up the mess, and makes the air a lot healthier to breathe.

Safety note: No dust collector captures the superfine particles that can cause harm to your respiratory system. So, even with an effective dust-collection system you still need to wear an approved dust mask.

Also, left uncollected, powdery sawdust will coat the floor of your shop, increasing your odds of slipping and falling. Plus the airborne particles can find their way into delicate machine, motor, and electrical components, causing premature breakdowns.

Some woodworkers try to lick these problems by hooking up a shop vacuum to their machinery. This solution works for the short haul on machines that produce small amounts of debris, such as a bandsaw. But vacuums have too many limitations to be practical for most shops.

First of all, even heavy-duty shop vacuums move relatively small volumes of air compared to dust collectors. For example, Sears' most-powerful shop vacuums draw less than half as much air as Sears' 1-hp dust collector.

Too, shop vacuums have 1¼" or 2½" hoses that quickly clog with the large wood shavings produced by machines such as planers. Dust collectors, on the other hand, seldom clog when moving big chips, relying on 4"-diameter hoses and large volumes of air to do the job efficiently.

Finally, whereas shop vacuums have noisy universal motors intended for intermittent operation, most dust collectors have heavy-duty induction motors. These run much more quietly and are designed for long periods of continuous duty.

Inside a dust collector: it's dirty work

To move a large quantity of air and workshop debris, a dust collector has a centrifugal impeller that draws air from its center and expels the air toward the outside of its rapidly rotating fins. The impeller pulls debris-laden air through a pickup hose and pushes it through a filter bag before the air returns to your shop.

As shown in the cutaway drawings at *right,* manufacturers have devised two systems for handling this process. With the exception of the two Delta units, all of the machines we tested fall into the single-stage category. These machines draw all of the shop debris through the impeller before sending it to the filter bag and waste bag. Nearly every speck of dirt winds up in the waste bag, except for a fine lining of dust inside the filter bag.

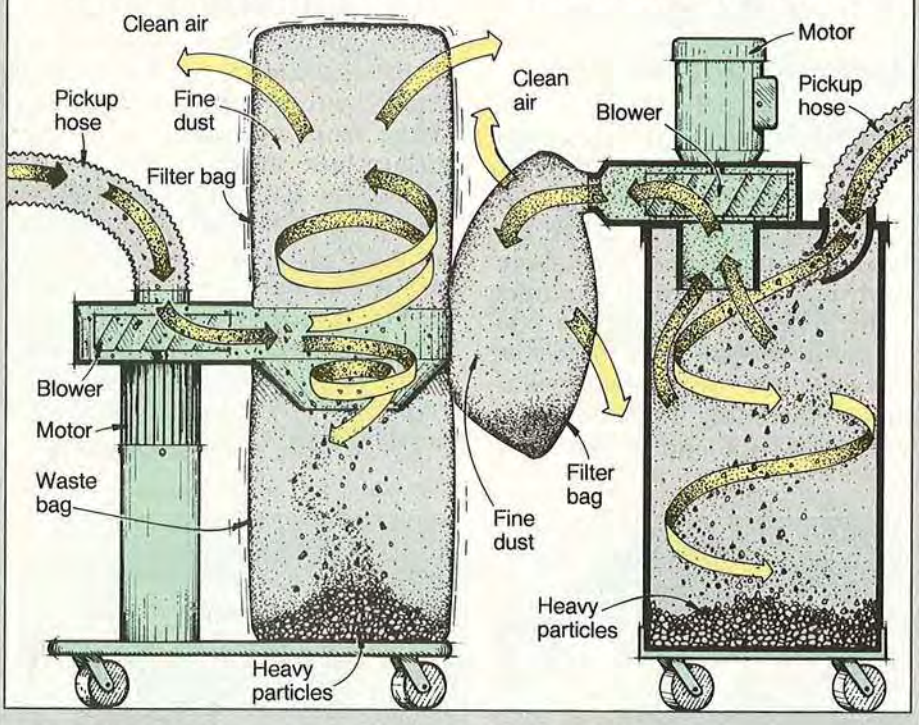
In a two-stage collector, heavy particles such as chips, shavings, scraps, and metal debris, fall into the waste drum. Only fine dust passes through the impeller and into the filter bag.

Print this article

GUZZLERS

DUST COLLECTORS

AN INSIDE LOOK AT TWO TYPES OF DUST COLLECTORS



ADVANTAGES

- Easy waste-bag changes (you simply detach the waste bag and dump its contents into a trash bag or container).
- Dollar-for-dollar, you get more suction.

ADVANTAGES

- Impeller lasts longer because only fine dust particles pass through it.
- Nails, screws, and other metal debris cannot strike impeller or impeller housing and possibly create a hazardous spark.
- Less noise generated because large particles do not strike impeller or impeller housing.

Suction: The more, the better

Until now, you've had to depend on manufacturer's specifications when deciding which machine has more suction. There's just one problem: manufacturers do not have standardized procedures for measuring suction, so you can't reliably compare the ratings.

To solve this dilemma, we tested the machines for air velocity as measured in cubic feet of air moved per minute (cfm), and static pressure (sp) or the power of the dust collector to lift heavy particles. To obtain these measurements, we hooked each dust collector to an 8′ length of 6″-diameter duct pipe and took readings with an air velometer as shown *below*.

Continued

All of the machines generated adequate sp readings, but we found big differences in the cfm numbers. The Woodmaster 1033 and Grizzly G1029 were the only machines to draw more than 600 cfms. With these air guzzlers, you could collect from two or three machines simultaneously. Both machines require 220-volt service.

Any of the dust collectors with 300-or-more cfms should work with a home-workshop central-dust-collection system, provided you only keep one blast gate open at a time. All of these work on 110 volts; just remember to keep them on a separate circuit from your power tools to avoid overloading a circuit.

Note: Because of differences in testing procedures, our cfm ratings are lower than those specified by manufacturers. So, don't use our cfm ratings for comparison with machines not included in this article.

What you need to know about impeller systems

As you can see in the chart on *page 47*, impellers and impeller housings are made of steel, aluminum, or plastic. All of these materials have advantages.

Steel wears well under the abrasive action of dust particles, but it can spark if a metal scrap or fastener accidentally gets sucked into the collector. Although aluminum will not spark, it will wear more quickly.

Only one of the machines we tested—the Shopsmith DC3300—has a plastic fan and impeller housing. Like aluminum, plastic will not spark, but it will wear faster than steel or aluminum.

Motors: look for one that's protected from dust

By its very nature, a dust collector becomes a magnet for all the dust in your shop. Since dust can harm the windings, centrifugal switches, and other components inside a dust collector's motor, it makes sense to buy a machine with a totally enclosed, fan-cooled motor, such as the one shown *below left*. These sealed power plants have fans mounted on the end of the motor to cool the motor housing. Open, drip-proof motors, like the one *below right*, draw shop air—dust and all—directly through the motor for cooling. ("Drip-proof" means these motors are protected from overhead dripping water.)

Impeller-housing inlets: a matter of safety

The fins of a rapidly spinning dust-collector impeller will do serious damage to any hand that gets drawn into them, so we applaud manufacturers that have taken measures to guard the inlet to the impeller housing. As you can see in the photo at *right, top*, many of the single-stage machines—including the Grizzly, Jet, Penn State DC2, and Woodmaster dust collectors—have no protection over the inlet. If you already own, or plan to purchase such a machine, you should clamp a hose or pipe onto the inlet and leave it there permanently.

In answer to this potential hazard, the Sears and Powermatic machines have permanently attached housings that extend from the impeller-housing inlet to a hose-attachment port near the base of the machine. This design effectively eliminates the possibility of an accident.

The Makita 410 also has an effective safety system. As shown at *right, middle*, a spring-loaded safety switch prevents the machine from operating with the pickup hose disconnected.

Officials at Penn State attempted to correct this potential hazard by placing a grate over the inlet on their model DC3 (see photo at *right, bottom*), but this only works for fine-dust pickup. For applications other than sanding, you need to remove the grate to prevent clogging.

Totally enclosed, fan-cooled motors have a fan on the end of the motor and beneath a protective housing.

Open, drip-proof motors cool by allowing shop air to pass directly through them.

The Grizzly, Jet, Penn State DC2, and Woodmaster units have no physical barrier to the impeller-housing inlet.

The Makita 410 has a safety switch which turns the machine off when you disconnect the pickup hose.

The Penn State DC3 has a grate covering the impeller-housing inlet, but it clogs when handling debris larger than fine sanding dust. You can easily remove the grate, but doing so leaves no protection over the opening.

A sewn-in hoop on the Sears 29978 waste bag forms a good seal and helps you quickly change the bag.

We like the quick-release metal band that holds the filter bag securely in place on the Sears 29978.

Two locking pins hold the single bag of the Makita 410 securely in place, and help make for quick disconnects.

The nylon straps on the Grizzly G1029 work conveniently, but need to be snugged up from time to time.

Bag changing: it should be a hassle-free experience

A dust-collector's waste bag can fill up in no time when you're making a lot of chips, so you'll appreciate a bag that changes easily. Two machines in our test—the Sears 29978 and Makita 410—distinguished themselves in this area.

The Sears machine has a flexible metal hoop sewn into the top of its waste bag. To remove or replace the bag, you flex the round hoop as shown *top left*. With the hoop nestled in its holder, the air pressure inside the bag, and the weight of its contents, hold the bag securely in place.

To secure the Sears' filter bag, you simply pull on the quick-release metal band as shown *top right*. The Powermatic 073 employs the same system, but we struggled to pry the latch of its undersized band into place. Mark Seymour of Powermatic told us he is aware of the problem, and will consider using larger bands in the future.

Most of the other machines in our test have hose-clamp bands that you tighten with a screwdriver or nutdriver. These work fine, although not quite as fast.

The single waste bag on the Makita has two small pins as shown *above left,* that lock the bag to the impeller-housing outlet. This makes emptying quick, simple, and effective.

To secure the bags on the Grizzly G1029, you tug on a nylon strap as shown *above right*. This proves easy enough, but the straps tend to loosen over time, and once in a great while the filter or waste bag blows off.

Continued

DUST GUZZLERS

Bag filtration: a tight weave traps more particles

Three of our tested models—the Penn State DC3, Powermatic 073, and Woodmaster 1033—had loosely woven filter bags that allowed visible dust to pass through them, as shown in the photo *below.* We asked the manufacturers about this problem and received a variety of responses.

We backlighted the filter bag on the Powermatic 073 to show its leakage of visible dust particles.

Ed Levy of Penn State told us his company recognizes the problem and plans to offer an optional bag with a tighter weave. Mark Seymour of Powermatic said he wasn't aware of the problem, but he would look into it. John Miller of Woodmaster gave us the most encouraging news.

"We'll change it immediately," Miller told us. "We'll switch to a tightly woven bag; I don't think it will increase the cost of the unit." We later tested Woodmaster's new bag—it worked well.

What you can do about leaky filter bags

Good-quality dust-collector filtration bags have a sturdy, tightly woven polyester fabric for trapping visible dust. You can custom-order such a bag for most home-workshop dust collectors for $30–$40. For a price quote, contact:

Murphy-Rodgers
2301 Belgrave Ave.
Huntington Park, CA 90255
Call: 213/587-4118

Noise: Here's some sound advice

Generally, the more air that a dust collector moves, the more noise it will make. But as you can see in the chart at *right,* a few machines actually moved more air than their counterparts while generating less noise. The Makita 410 was by far the noisiest machine in our test. Unless you wear hearing protection, the Makita's whiney universal motor will hurt your ears.

Mobility: a consideration if you're on the go

In the chart at *right,* we rate the machines according to how easily they move from spot to spot. The Makita 410 and Penn State DC2 earned "excellent" ratings because of their portability. You can haul these from place to place without difficulty, and store them in a small area. But, as you can see in the "size" category of the chart, these two units take up a lot of floor space once turned on.

Which one should you buy?

If you're looking for maximum suction for the dollar, you can't top the Grizzly G1029 or Woodmaster 1033. The Woodmaster had the highest-quality motor, impeller, and impeller housing of the machines we tested.

Among the 1- and 1½-hp models, we had a tough time picking a winner, but we give a slight edge to the Sears 29978 because of its easy bag changes and safety features. For about $100 more, the Powermatic 073 gives you more suction and a unique floor-sweep feature. As shown *above,* you can divert the suction to the floor by opening a blast gate that's located below the pickup-hose inlets. But, if you buy this machine, you'll need a new filter bag and strap.

By opening a blast gate on the Powermatic 073, you can use the machine as a mobile floor sweep.

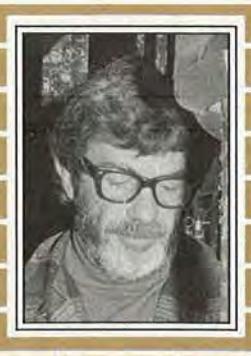
If you have safety and quiet operation at the top of your shopping list, give the two Delta models a serious look. Although these units delivered less suction than most similarly priced machines, their two-stage design gives them advantages that the competition can't touch. And, these units have loads of storage capacity: 55 gallons for the model 50-180 and 35 gallons for the model 50-179.

Written by Bill Krier
Technical consultant: George Granseth
Photographs: John Hetherington
Illustrations: Bill Zaun

CLEARING THE AIR ON 11 POPULAR DUST COLLECTORS

MANUFACTURER	MODEL	IMPELLER			MOTOR				PERFORMANCE EVALUATION (11)									ACCESSORIES (12)						
		IMPELLER MATERIAL (1)	HOUSING MATERIAL (1)	INLET DIAMETER (INCHES)	TYPE (2)	HORSEPOWER (3)	VOLTS	SIZE (4) H×W×L (INCHES)	NOISE (DECIBELS) (5)	AIR VELOCITY (CFM) (6)	MAXIMUM STATIC PRESSURE (7)	BAG FILTERATION (8)	BAG CHANGING (8)	DUST LEAKAGE (8)	FIT AND FINISH	HOSE QUALITY (9)	MOBILITY (10)	STANDARD	OPTIONAL	WEIGHT (LBS.)	COUNTRY OF ASSEMBLY (13)	LIST PRICE	SELLING PRICE (14)
DELTA	50-179	CA	SS	4	ODP	¾	110/220	41X28X38	78	261	6.2	G	G	G	G	F	G	H	*	53	U	$424	$345
DELTA	50-180	CA	SS	5	TEFC	1	110/220	45X35X52	82	521	6.7	E	G	E	G	F	G	H	D, C, *	72	U	537	440
GRIZZLY	G1029	SP	SS	1@5" or 2@4"	TEFC	2	220	76X20X35	84	689	8.9	G	G	G	G	*	G	-	H, A(4"–3"),*	180	T	295	295*
JET	DC-650	SP	SS	4	TEFC	1	110	56X14X26	81	428	6.6	G	G	*	F	*	G	-	-	84	T	285	230
MAKITA	410	SP	SS	2 13/16"	U	*	110	30X24X48	92	221	10-plus*	E	E	E	E	E	E	H	A(4"–2 13/16"),*	20	J	505	298
PENN STATE	DC3	SP	SS	4	TEFC	1½	110/220	17X19X45	82	375	6.4	F	F	F	G	P	E	H, A(4"–3"), A(4"–2")	-	46	T	210	210*
PENN STATE	DC2	SP	SS	2@4"	TEFC	1½	110/220	75X19X38	77	287	7.1	G	G	F	F	P	F	H, A(4"–3"), A(2@4"–2")	-	120	T	300	300*
POWERMATIC	073	SP	SS	1@6" or 2@4"	TEFC	1½	110/220	73X16X32	87	468	8.7	P	P	E	E	*	G	-	A(4"–3"), A(4"-2½"), DB	125	T	400	400
SEARS	29978	SP	SS	4	TEFC	1	110	60X15X27	85	318	6.4	G	E	E	E	E	G	H, A(4"–2½")	*	69	T	300	300
SHOPSMITH	DC3300	P	P	1@4" or 3@2½"	ODP	½	110	48X21X26	79	120	6.8	G	F	E	E	G	G	H(2), EW, A(2½"–1¼"), DB(6), PU	BG, LF	64	U	459	459
WOODMASTER	1033	CA	CA	6	TEFC	3	220	72X24X44	85	795	9.4	E	F	G	G	*	*	-	H, *	140	U	499	499*

1. (CA) Cast aluminum
   (P) Plastic
   (SP) Steel plate
   (SS) Stamped steel
2. (ODP) Open, drip-proof induction motor
   (TEFC) Totally enclosed, fan-cooled induction motor
   (U) Universal motor
3. (*) 9 amps, no hp-rating available
4. Measured with machine turned on. With bags deflated, the Makita 410 measures 11X11X11", and the Penn State DC3 measures 17X18X18". The Woodmaster was measured with a 55-gallon drum beside it.
5. Measured at a distance of 6 feet. No debris passing through impeller.
6. Cubic feet of air per minute (CFM) through a 6"-diameter pipe.
7. Measured in column inches of water. *Makita 410 registered beyond our scale.
8. *Jet DC-650 has no grade in this area because manufacturer was in process of improving the machine as article was produced.
9. *These machines do not come with a hose.
10. Woodmaster machine is not designed to be mobile. To mobilize it, you need to build a wheeled platform for supporting the blower and drum.
11. E Excellent
    G Good
    F Fair
    P Poor
12. (A) Adapters
    (BG) Blast gate
    (C) Casters
    (D) Drum
    (DB) Plastic dust bags
    (EW) Extension wands
    (H) Hose
    (LF) Large filter hood
    (PU) Dust-pickup attachments
    *You can purchase a variety of accesories for adapting this dust collector to woodworking machines offered by the manufacturer.
13. (J) Japan
    (T) Taiwan
    (U) United States
14. Selling prices based on catalogs, advertisements, and dealer inquiries at time of article's writing.
    *Price does not include shipping.



Art Carpenter

ART CARPENTER'S LINSEED-

While many admire the one-of-a-kind furniture pieces built by California designer-craftsman Art Carpenter, an equal number praise his favorite finish. We asked Art to reveal the details of his great-looking, easily maintained finish so that you, too, can get similar results.

Print this article

To fill the wood grain, Art Carpenter wet-sands each application of his finish. The result is a gleaming, real-wood look.

Darn few people can boast of being a professional woodworker since 1948, but furnituremaker Art Carpenter of Bolinas, California, can. And over the years, he has worked with a lot of finishes. What's his favorite? A clear oil that has the added resins of varnish. He calls it "LTV."

"This finish penetrates the wood; it's not just sitting on top of it," Art explains. "It's not as hard a finish as lacquer or plain varnish, but you can repair it easily by sanding a spot out and finishing just that area. I've taken out nicks and scratches from furniture that I made for clients 30 years ago. It's a woodsy finish, too. You're almost in contact with the wood without anything artificial between you."

Art's three-part formula

Art's finish calls for equal parts of three ingredients: linseed (or tung) oil, turpentine, and varnish (that's LTV). According to him, you can vary the formula. "I know some woodworkers who use polyurethane varnish with it, or mix in beeswax, but I usually don't," Art says. "And one of the reasons I use traditional varnish rather than polyurethane is that I am more comfortable with its feel, odor, and perhaps lower toxicity."

Art also recommends buying a less expensive interior varnish rather than an exterior spar varnish with costly ultraviolet-light blockers. Interior varnish has all the resins needed. And he prefers using linseed oil in the mix. "It's half the price of tung and available everywhere," he adds.

Project preparation makes a difference

The secret to success with Art's three-part finish doesn't depend solely on the ingredients. There are a few tricks in the surface preparation, too.

TURPENTINE-VARNISH

"First, always wipe down the wood with a damp rag," advises Art, who rarely stains his projects. "Let the wood dry, then fine-sand with 220-grit, 320-grit, or finer. Wetting the wood raises the grain hairs so you can sand them off for a super-smooth surface. But it has another purpose. Later, when you get the finish on, should you happen to spill water on the finish before it cures, the water won't raise the grain *underneath* your finish, leaving dull spots."

Before Art applies the finish, he follows another necessary step, particularly on soft or more porous woods. "I spread on a 'sealer' coat of WATCO Danish Oil, or another polymerizing oil, such as Behlen's Danish Oil, and let it dry for 24 hours. I do that because polymerizing oil dries anaerobically, meaning without oxygen. Linseed or tung oil—part of my finishing mixture—requires oxygen to dry. If I were to put my mixture on first, it could penetrate deep into the wood and never really dry because it couldn't get oxygen. Then, when the furniture was in sunlight, small bubbles of oil would rise to the surface and harden into beads. The WATCO blocks deep penetration."

Building a finish one coat at a time

How many coats of his three-part finish does Art put on a project? "A horizontal surface, such as a tabletop, requires many coats because it takes more abuse than a vertical one, like a chair leg," Art comments. "So, I'll put 12 to 15 coats on a tabletop, five to seven on a chair."

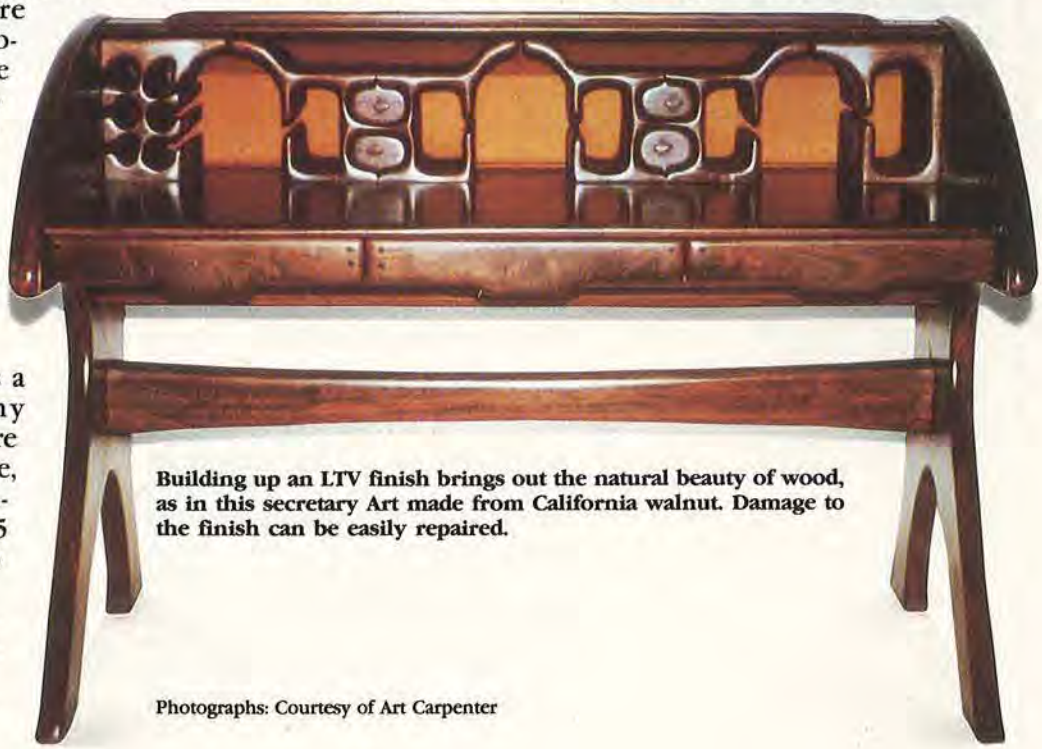
The method of application also differs with the project being finished. For a chair, brush coats will do. But a tabletop requires flow. "I just pour it on," says Art, "and spread the mixture around with my hands." (Note: Wear gloves, or spread with a brush.) He adds that an integral part of the process is sanding the wood while each coat is still wet. "This pushes the oil and wood dust into the pores, thereby leveling an otherwise microscopically pitted surface. And, the wet-sanding means you don't have to worry about dust—it goes in the pores, too."

"Sand with wet/dry paper of the finest grit you used to prepare the unfinished wood," notes the craftsman. "Then, wipe the surface *thoroughly* with a soft cloth. If you don't, you're going to have a gummy mess. Let each coat dry for 24 hours or more before repeating the application. What you want is ultrathin coats that gradually fill the grain."

After Art has laid down and wet-sanded the last coat, he leaves the work to dry and cure for 30 days. "If a customer wants to take the piece home, I tell him to use it carefully for a month, and during that time," he warns, "be sure to wipe off any spilled liquids. But when it has cured, even bourbon won't hurt it."

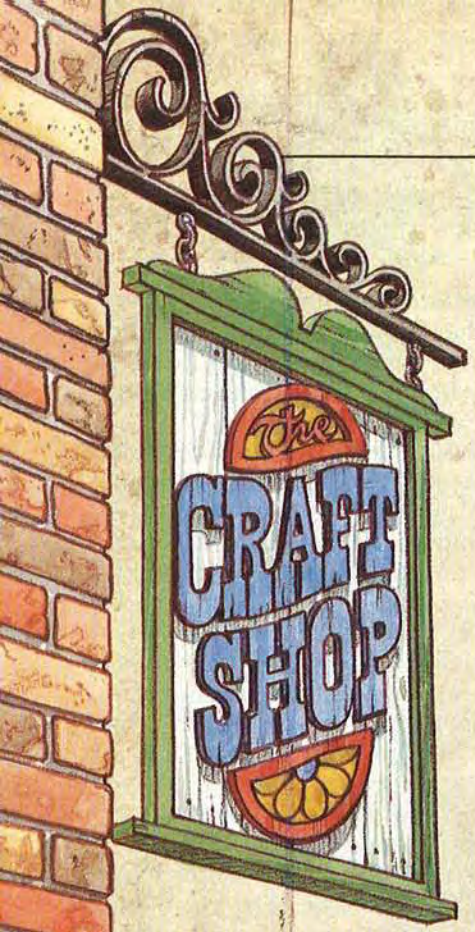
Art likes to rub down the cured finish of a large surface with no. 0000 gray Scotch-brite pads. According to him, a last rubdown evens out any reflective high spots. Art prefers Scotch-brite pads to steel wool for two reasons. "Steel wool leaves metallic particles in the grain that can show up as black spots in the finish," he says. "Scotch-brite doesn't leave a residue. Steel wool also tends to dig out the fill that you have so carefully worked in."

Art's LTV finish gets better with time, too. He says, "Just clean the surface when needed with warm water and detergent, making sure to rinse with a dampened cloth. Then wipe on a small amount of LTV every six months or so to keep building it. But never use lemon oil or wax on the piece because you'll kill any possibility of building the finish."

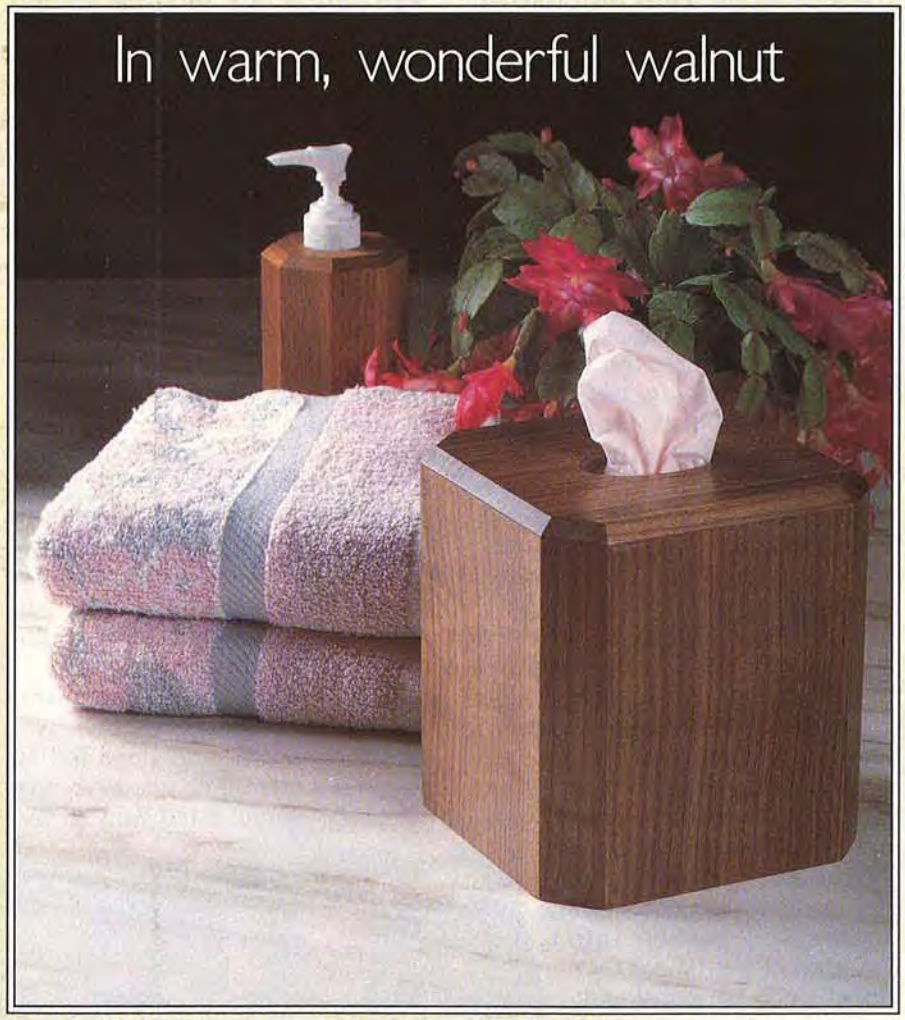


Building up an LTV finish brings out the natural beauty of wood, as in this secretary Art made from California walnut. Damage to the finish can be easily repaired.

Photographs: Courtesy of Art Carpenter



CLASSY TISSUE



Bring the warmth of wood to your countertop or dressing table with this lovely walnut tissue box. We've designed this easy-to-build cover-up to match the lotion dispenser featured in the October 1991 Craft Shop section.

Print this article

***You'll need** ¼"-thick walnut stock for this project; plane or resaw thicker material. **(Note:** we designed the cover to fit over a boutique-size tissue box.)*

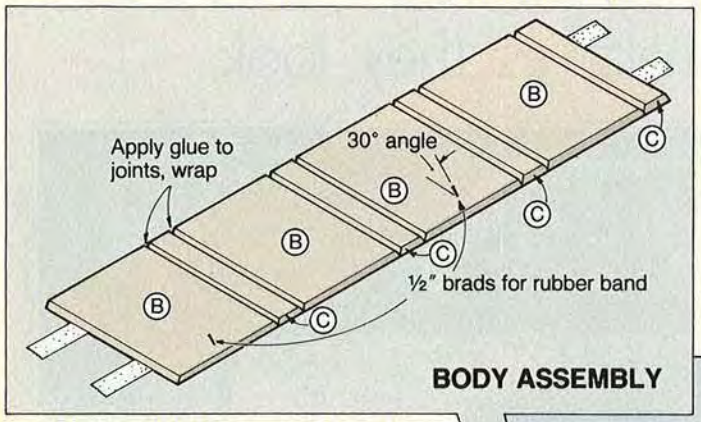
Cut a 6" square from ¼" stock for the top (A). Then, tilt your tablesaw blade for a 22½° cut. Bevel-rip both edges of two 12" lengths of ¼" stock to 4⅛" wide and two more lengths to 1". (We verified the saw settings first by making test cuts on scrapwood.)

Now, reset the saw to 0°. Crosscut four 5¾"-long pieces from the wide stock for the sides (B) and four the same length from the 1" material for the corners (C).

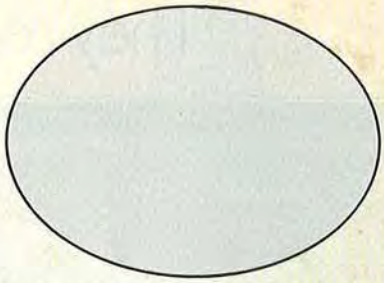
On your workbench, lay out alternating sides (B) and corners (C), beveled edges down. Align the ends, and tape the pieces together with masking tape or filament tape. Turn the assembly over, and drive a small brad into each of two opposite sides at a 30° angle about 1" from the bottom, where shown in the Body Assembly drawing.

Roll the taped pieces to form the body, checking all joints for a tight, accurate fit. Unroll them, apply woodworker's glue to the

BOX COVER-UP



BODY ASSEMBLY


FULL-SIZED PATTERN FOR TOP HOLE

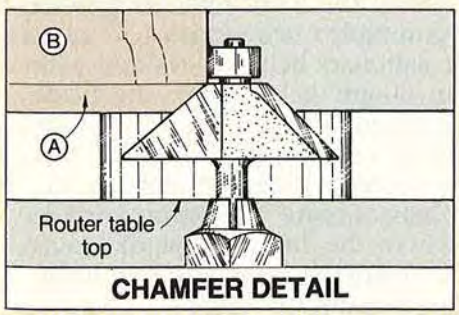
open joints, and then roll them up again. Secure with additional tape until the glue dries.

With the top piece (A) upside down on your bench, place the glued-up body into position and trace the body outline onto the top. Then, trace the oval pattern onto the center of the top.

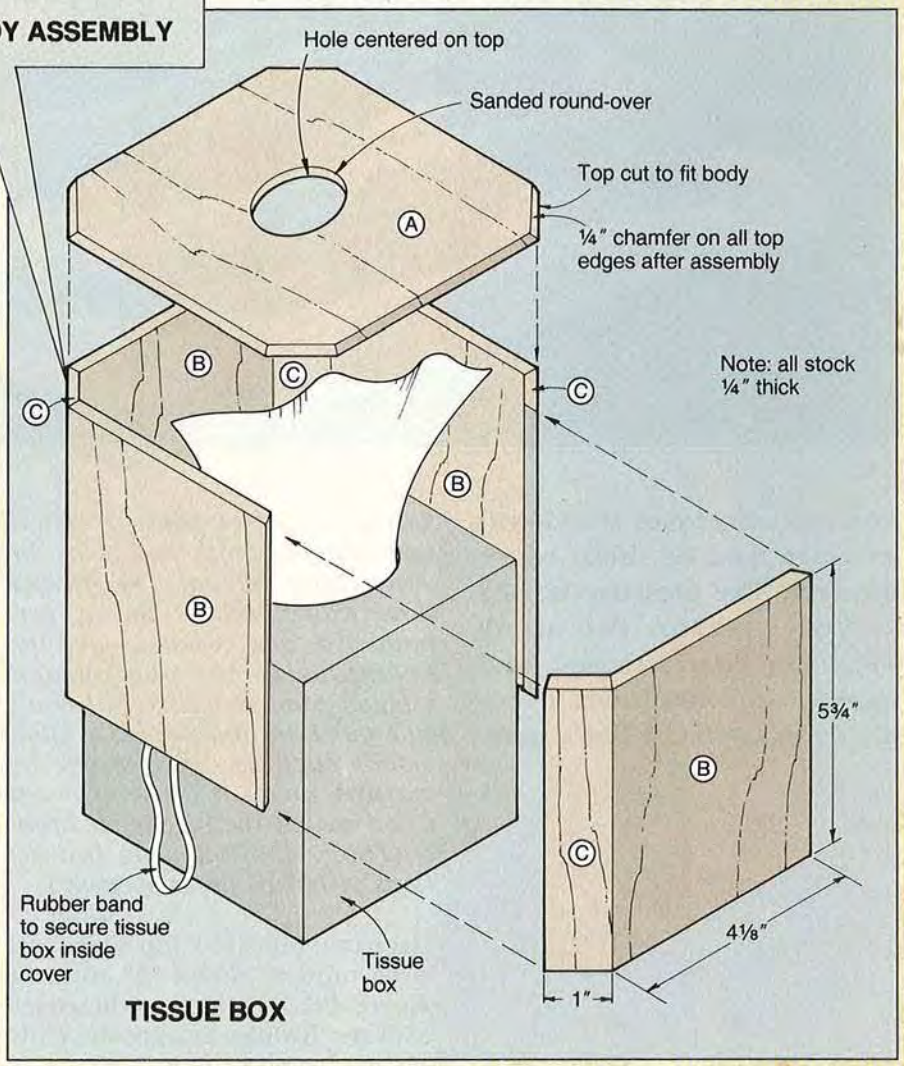
Drill a ⅛" blade start hole, and cut out the oval with your scrollsaw. Sand round-overs around the opening on both sides. Glue and clamp the top into place.

Install a piloted 45° chamfer bit in a table-mounted router. Then, rout a ¼" chamfer around the edge of the top as shown in the Chamfer detail.

Sand, and then put on a clear, durable finish (we applied satin-finish polyurethane). Insert the tissue box, and stretch a rubber band between the two brads to hold it in place.



CHAMFER DETAIL



TISSUE BOX

Project Design: Larry Johnston
Illustrations: Mike Henry; Bill Zaun
Photograph: John Hetherington

FUN-TO-FASHION LETTER OPENERS

They're as sharp as they look

Anyone who loves wood will treasure one of these letter openers. The pleasure begins as you fashion the sleek shape on your bandsaw and sander, and continues every time you open the day's mail.

Print this article

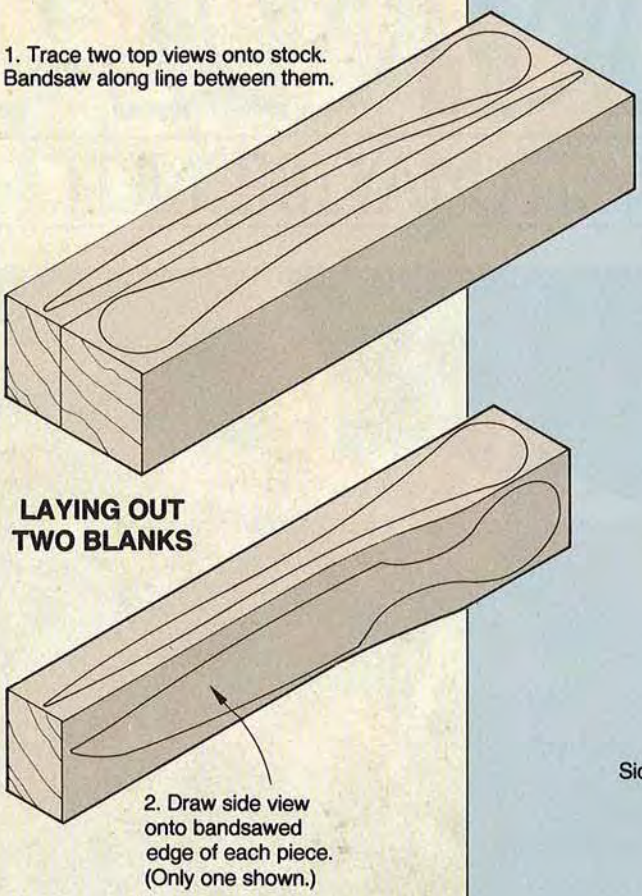
***Select** a special piece of wood with striking grain and color for your letter opener. We picked three exotic woods—bocote, pernambuco, and cocobolo—for the examples in the photograph (shown front to back). But don't rule out beautiful domestic hardwoods such as curly maple or walnut burl. A close-grained wood makes the best letter opener. (Note: The following instructions yield two letter openers.)*

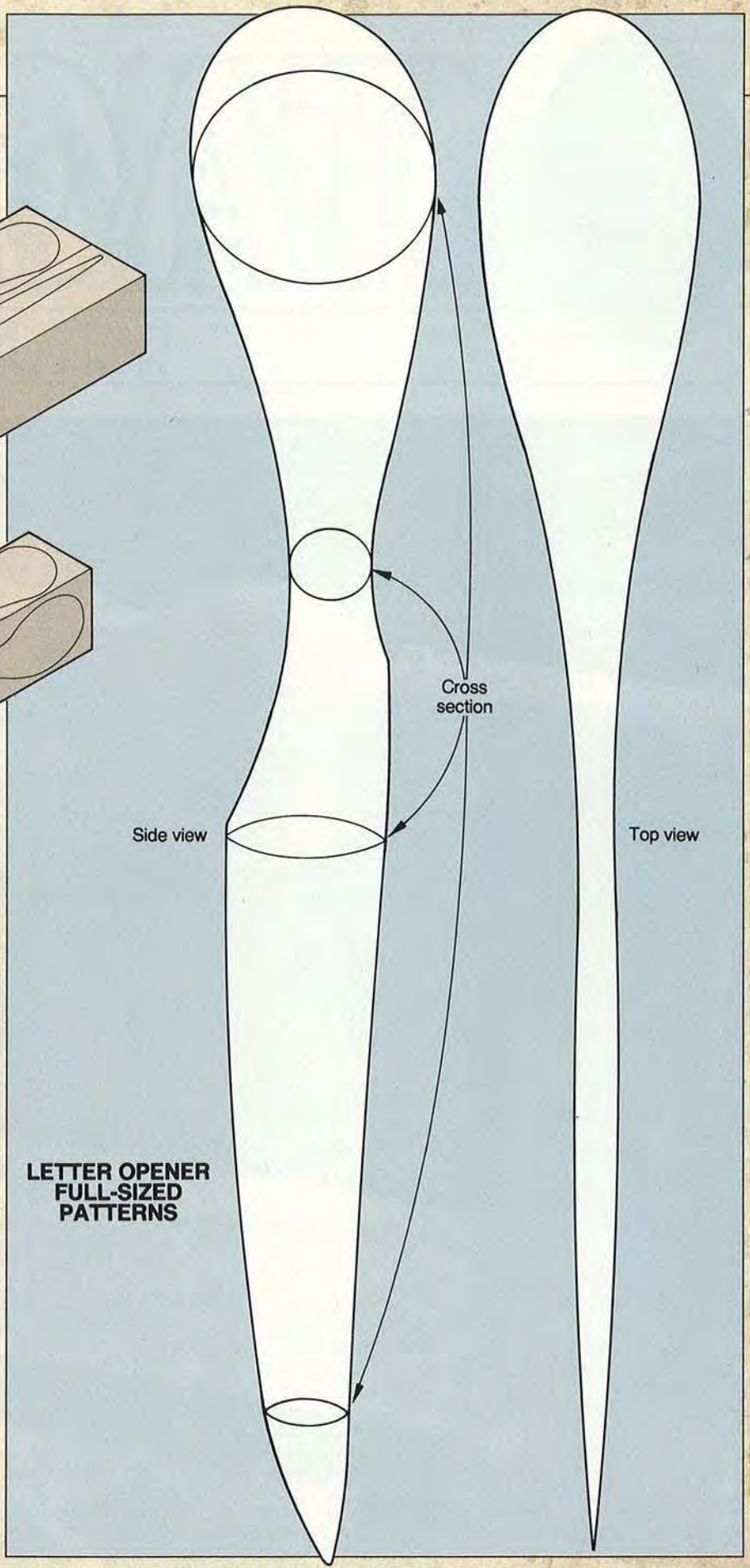
Trace two full-sized Top View patterns onto a 2×2×12" turning square. Place them near the edges with the handles at opposite ends of the turning square.

Then, bandsaw between the two patterns where shown by the Laying Out The Blanks drawing. With the two pieces separated, draw the side-view pattern onto the bandsawed side of each. (Be sure to align the ends of the Top View and Side View patterns.)

Then, bandsaw around the Side View pattern line on each part. After cutting, tape each cutout and its waste parts back together with masking tape to re-form the pieces. Bandsaw around each Top View line to complete the blanks. Remove the tape and waste.

Sand the letter openers to final form with a belt sander. (We used a stationary belt sander fitted with an 80-grit belt.) Shape the blade and handle as shown on the Side View cross sections on the pattern, sharpening both edges of the blade. Create a flowing surface where the bulblike handle joins the blade. Blunt the tip slightly after forming the blade.


1. Trace two top views onto stock. Bandsaw along line between them.
LAYING OUT TWO BLANKS
2. Draw side view onto bandsawed edge of each piece. (Only one shown.)



With the shaping complete, continue sanding with progressively finer grits through 400. After sanding, burnish the surface by rubbing it with another piece of wood. (We then buffed our letter openers on a muslin wheel with white polishing rouge to achieve a high sheen.) Finally, apply a clear finish such as Watco Natural Danish Oil.

Buying Guide

Exotic woods. Bocote, cocobolo, and pernambuco, 2×2×12" turning square, $15 each or three for $30, ppd. in U.S.; your choice, mix or match, Woodworkers Source, 5402 S. 40th St., Phoenix, AZ 85040. Call 800/423-2450.

Project Design: Deborah Doyle
Photograph: John Hetherington
Illustrations: Mike Henry

TAGUA

Print this article

IT MAY BE NUTTY,

TURNING

BUT YOU'LL LOVE IT

The tagua nut's odd shape, mottled brown covering, and small size disguise an intriguing material for the woodturner—vegetable ivory. It turns like hardwood, but its smooth, creamy appearance more closely resembles a piece of elephant ivory. Here's what you need to know to embark on this new adventure with a material that's over a century old.

The Victorians' favorite button material has returned as one of turning's newest treats: the tagua (TAH wa) nut. This kernel from certain South American palm trees doesn't look like much, but you'll find lustrous vegetable ivory inside that plain brown wrapper.

The preplastic world had a healthy appetite for vegetable ivory. Every year from about 1860, factories here and abroad turned, milled, or sawed millions of the then-newfound nuts into buttons.

Victorian-era manufacturers turned out such things as pincushions, thimbles, and tape measures, too. Some even threaded nuts together to make more elaborate items. Needle cases often incorporated two or three nuts.

Plastics pushed tagua out of the marketplace during the 1930's. But, today, because the nuts fit right into rain forest protection schemes as a marketable, sustainable resource, there's new interest in them. (Several garment makers now use tagua buttons.)

Continued

Tools for tagua turning

Set your long and strong gouge aside. You're going to need something smaller to turn tagua nuts. You can round down the nut with a ¼" spindle gouge, but don't count on standard tools for any inside work.

California tagua-turner Chuck Luebbers often relies on dental tools (ask your dentist for some or see the Buying Guide on *page 57*). "Grind the end to a shape you like," he advises, "but do it slowly so you don't burn the steel." Scraper styles work best. He likes to add a handle, such as the one shown *below* to hooked dental tools.

Sometimes, he makes his own tools. "It's not that hard to do," he says. "All you need is a grinder." He starts with W1 water-hardenable tool steel, available as round or square stock from most steel jobbers.

"The steel is soft so I just grind it to the profile I want." Chuck says. Then, he hardens and tempers the tool.

To harden W1 steel, heat it with a propane torch until cherry red (about 1,450 degrees F) and then quench it in a bucket of cold water. Polish it with 400-grit sandpaper so you'll be able to see the color change as you heat the tool for tempering.

Place the tool on a piece of thin sheet metal, and then heat to a straw color (650-700 degrees F) over a stove burner or torch. Don't heat it with a direct flame for this step. Let it air-cool, and then add a handle to your custom-made turning tool.

Reground dental scalers are just the ticket for reaching inside tagua turnings. Single-ended ones are best.

A practical assortment of tools for turning tagua nuts includes dental tools (note the ball-end handle added to one to give firm grip), an old screwdriver ground into a scraper, and a shop-made scraper.

TAGUA TURNING

Turners go nuts for a challenge

Woodturners anxious for novel experiences have taken an interest in the tagua nut, too. Long-time woodworker Chuck Luebbers of San Diego, California, shown *below*, is one. He first encountered the tropical nut at a turning seminar a few years ago. "Since then, I've been fascinated by the challenge of working with an object that is round on one side and flat on the others," Chuck says.

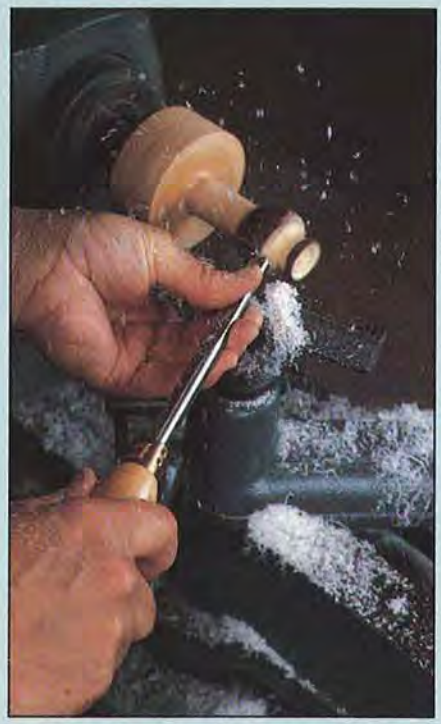
That odd shape and the nut's small size (1½–2" long) are the first characteristics a woodturner notices. There's another that might show up as the turning gets underway—a crack inside.

Since the nut is a tree seed, nature provides space inside for germination. A nib at one end leads to a fissure, which can be any size from barely perceptible to cavernous (relatively speaking, anyhow). In some instances the fissure will spoil your turning—that's part of the challenge.

Otherwise, you'll feel right at home with a tagua nut on the lathe. "The nut turns about the same as a hardwood such as rosewood or cocobolo," Chuck says. "Since there is no unpredictable grain," he adds, "it may even be easier." The hard, dense ivory is brittle, though, and can chip.

Chuck Luebbers shapes a vegetable ivory vessel. He runs the lathe at 2,000 rpm when turning tagua nuts.

A dowel and an auxiliary faceplate provide a simple, effective way to mount tagua nuts for turning.



You can use a small gouge to form the outside profile. That's the only chance you'll have to use your standard gouges.

Select a shape, then prepare the nut for turning

Before you mount the nut on the lathe, consider the shape of the planned turning. To turn a wide bowl or ornament, make the large, rounded side the bottom. For a goblet or a spindle, use an end. When you've determined the bottom, sand a flat spot about 1" in diameter on it.

Now, if you have a lathe chuck, grip a length of 1" dowel in it, letting 2–3" extend beyond the face. If you don't have a chuck, turn a 1" hole in the center of a scrapwood auxiliary faceplate, and glue a length of dowel into it. Again, let the dowel extend at least 2" past the face.

Turn a true surface on the end of the dowel, and then, glue the nut to it with cyanoacrylate adhesive (instant glue), as shown *left*. The gap-filling variety works best. Cover the flat spot on the nut with adhesive. Spray some accelerator (available from woodworking stores and hobby shops) onto it, and quickly join the two surfaces. Hold them together for a few seconds until they bond.

Keep the glue handy as you work. You can fill a crack by packing it with turning dust, then soaking it with glue. (We found it useful to have it close by, too, when we dislodged the nut and had to reglue it several times as we tried our first few turnings.)

Before starting the lathe, inspect the tool rest. If it's nicked, file it smooth—a dental pick will drop into a notch that a standard turning tool would slide right over. Set the tool rest at the centerline of the turning, and rotate the chuck or faceplate by hand one full turn to ensure that the lopsided nut clears it.

Turn the outside first

With the lathe running at about 2,000 rpm, begin turning the outside profile. Chuck cuts in with a parting tool to delineate the top of the turning, and then develops the overall form with a small gouge, as shown on the *opposite page*. Take it easy! Don't attack the tiny tagua nut with the gusto you would bring to a larger turning.

Because of the nut's shape, you may end up with spots of brown bark on your turning that you just can't get rid of. Don't worry about them—after polishing, the bark accents add character.

"When cleaning out the inside of the nut for a hollow vessel," Chuck says, "make the initial plunge with a corner of the parting-tool point." Open the hole to the diameter you want with your small tools. On a natural-edge vessel, turn off the lathe often to see how much edge remains.

Chuck cleans out the inside with dental tools and a scraper made from an old screwdriver. Use the dental tools as you would a scraper, shown *below*. Take advantage of different tool shapes to reach the inside of the wall.

Support the tools close to the work. Beware of nicks in the tool rest—they can lead to grief with small tools.

Turn the wall to about 1/16" thick. "The turning will be too small for your calipers, so bend a heavy paper clip to measure it," he suggests. "Place a light above and behind the nut, and you'll see the tool shadow. (Opening photo.) With practice, you can tell the thickness of the wall by the sharpness of the shadow."

Teeny tagua-turning ideas

Miniature vessls like those shown *above* aren't all you can make from tagua nuts. Here are some other wee turnings for you to consider.

- Earrings. Attach small spindles or rosettes to earring backs.
- Necklaces. Hang ornate turnings from jewelry chains.
- Drawer pulls. Epoxy headless machine screws into turnings.
- Rings. Turn vegetable ivory finger rings or earring hoops.
- Key fobs. Connect key chains to turnings with screw eyes.
- Bottle stoppers. Glue corks to fancy turnings.
- Tie tacks. Affix turnings to tie-tack backs. (Cuff links to match?)
- Fancy buttons. Make some great buttons for your coat. Why not? That's where it all started.

Polish it, and part it off

Sand the completed turning with progressively finer sandpaper—220- to 600-grit. Chuck puts a final polish on his ivory turnings with a cotton buffing wheel and a Moto-Tool. He loads the wheel with white jeweler's rouge, and then polishes the turning with the lathe running.

Carefully part off the turning. Chuck parts off in several steps to prevent chipping. He makes his initial cut with the point of a skew held upside down. He then cuts in to about the last 1/4" with a 1/16"-thick parting tool and completes the job with a dental tool. But, he warns, the turning could come off at any time: "Sometimes, the heat from parting off will break the glue bond."

All that remains is to polish the bottom of the piece, cut a new mounting surface on your dowel, and glue on another nut. That's the thing with nuts—you can't stop at just one.

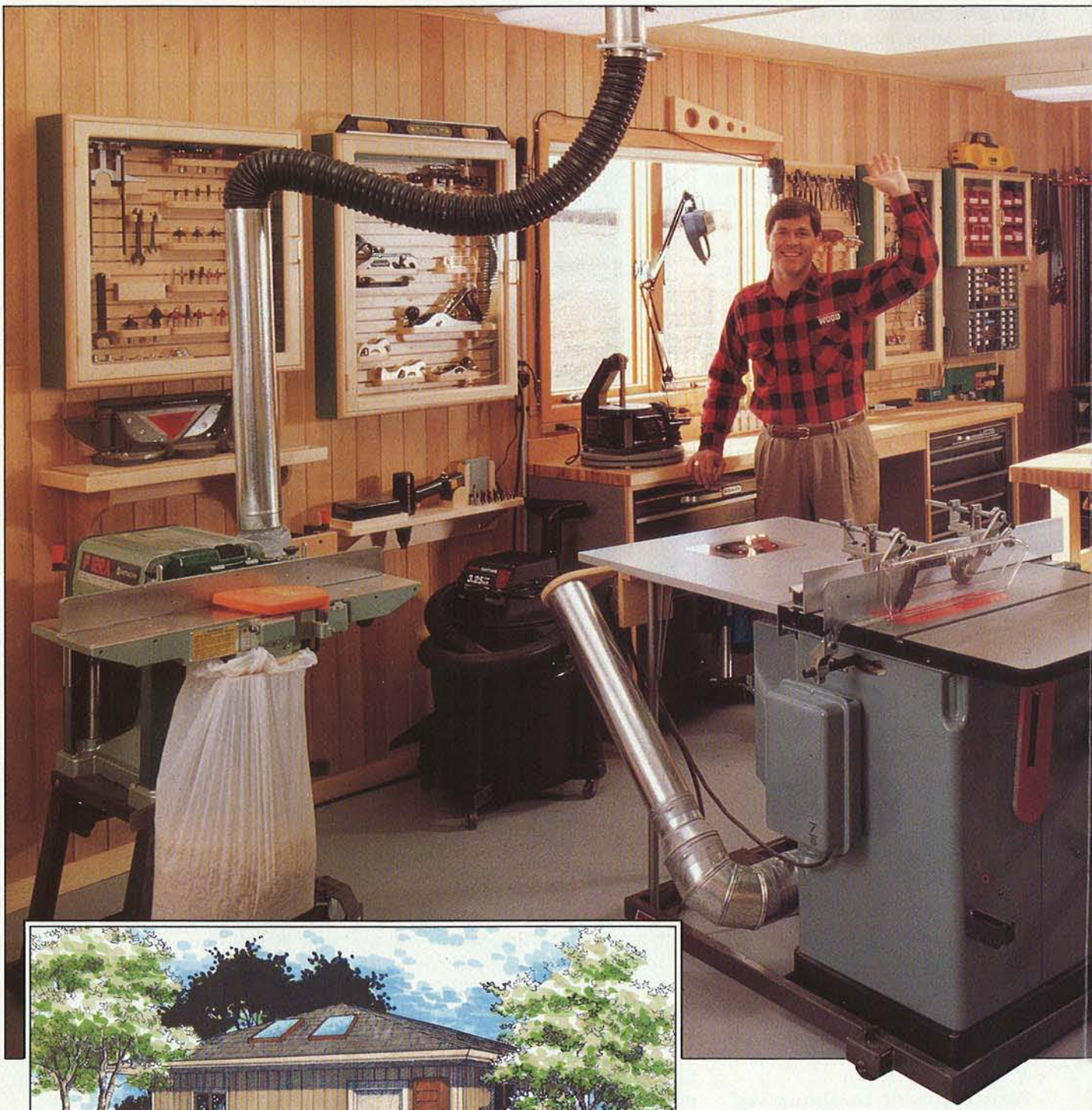
Buying Guide

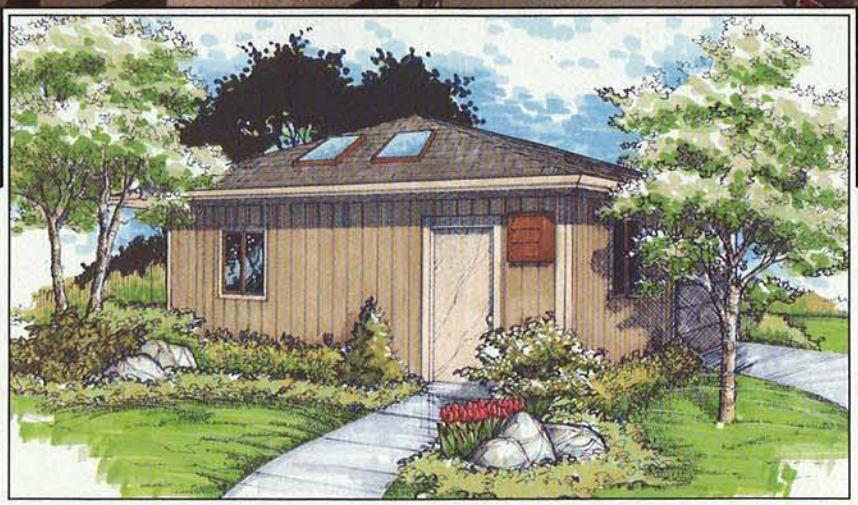
Tagua nuts. Ten tagua nuts, $14 ppd. in U.S., Tropical Exotic Hardwoods of Latin America, Box 1806, Carlsbad, CA 92018, 619/434-3030

Dental tools. Pair of sturdy, single-ended scalers (one curved, one angled hook), $22.50 ppd. in U.S., Dental Distributors of Iowa, 9103 Swanson Blvd., Des Moines, IA 50325, 800/397-3278

Written by Larry Johnston with Chuck Luebbers
Photographs: Gary Zeff

HERE IT IS! WOOD® MAGAZINE

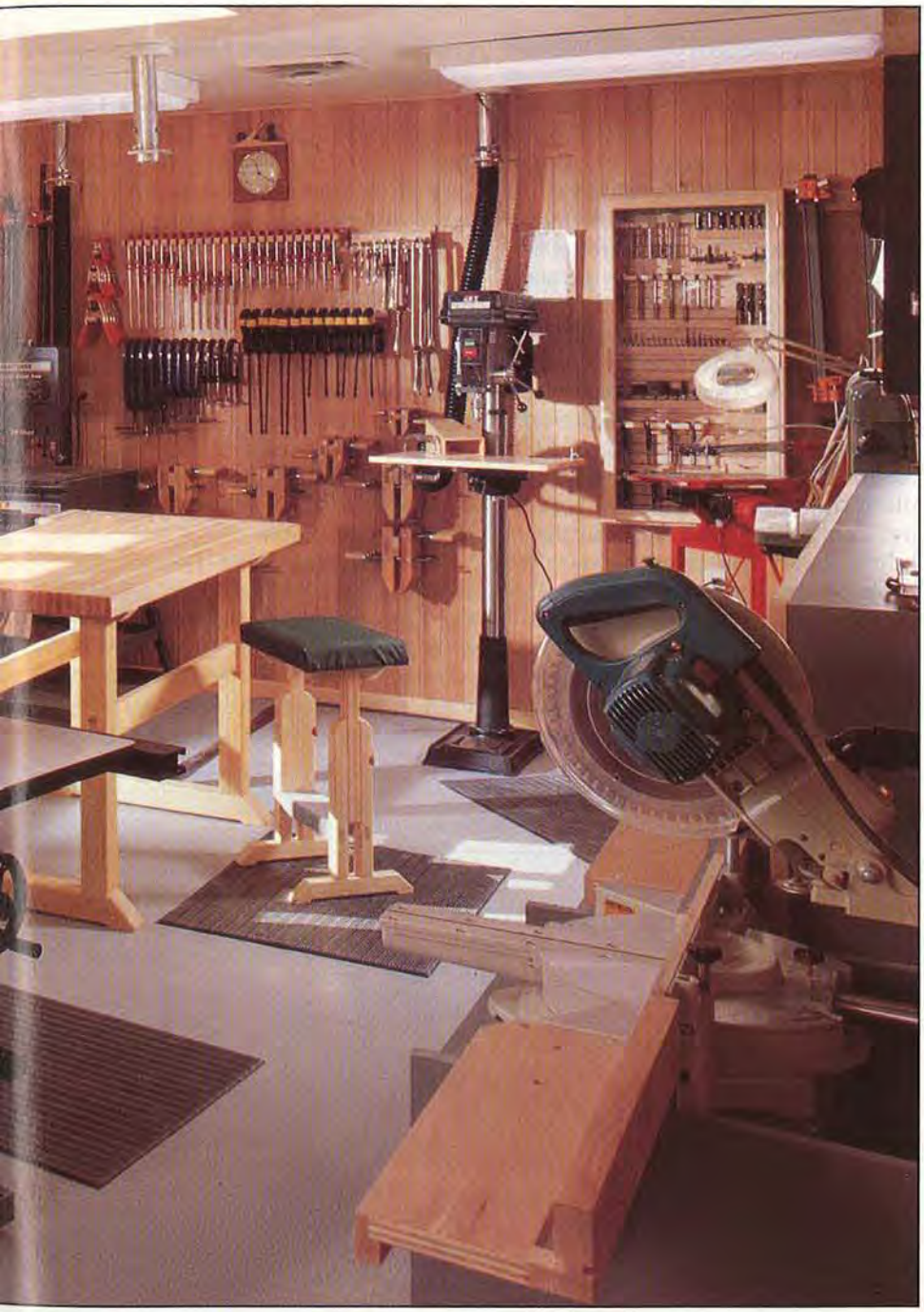




Above. **As you can see, *WOOD* magazine's IDEA SHOP is packed with some pretty nifty features, such as a concealed dust-collection system with drops, plenty of natural and fluorescent lighting, adaptable storage projects you can build, and lots, lots more.** ***Left.*** **The IDEA SHOP exterior.**

Print this article

S IDEA SHOP™



You say you want some help planning a new workshop? Or maybe you've got the urge to reorganize the one you have now. Either way, you've come to the right place. During your tour of *WOOD*® magazine's all-new IDEA SHOP, you'll discover how we took a 14×28′ bare-bones room and remodeled and outfitted it into the sensational, feature-filled woodworking center shown. Use any of the ideas you like—after all, we built this shop just for you.

Welcome, woodworkers, to *WOOD* magazine's IDEA SHOP. It's the result of almost a year of space planning, project designing, construction, and installation by nearly everyone on the staff. But was it ever worth spending time and energy!

In fact, the staff and I recently went on a walk-through. In addition to all the marvelous ideas and projects we had earmarked to cover editorially, we came up with still another several dozen practical ideas to tell you about. Some of these include the nifty organizers we created along the way, while others proved to be shop-smart products you can buy.

As you might imagine, we took a lot into consideration when we sat down at the drawing board to plan this sizeable undertaking. We looked at space organization, the working environment, comfort and health features, and, of course, safety and security.

All in all, the IDEA SHOP has turned out to be exactly that—a shop bursting with great ideas. On the following pages, we'll introduce you to all of the innovations. Then, in this and future issues, we'll offer you the detailed plans and instructions for each of the super storage units and organizers you see in the photographs.

Of course, we couldn't have created the IDEA SHOP entirely by ourselves. We owe thanks to over 50 manufacturers and suppliers who helped us out with materials and merchandise. You'll find them credited throughout this article, and in our IDEA SHOP tools story beginning on *page 82*. Now, continue the tour on the following pages and feast your eyes on our shop of shops.

Larry Clayton
Editor

PLAN FOR WORKING EFFICIENCY

"The workstation concept was important in our planning because woodworkers tend to break down a project into specialized tasks, such as sawing, sanding, and assembly. Nearby every major stationary machine are all the associated accessories and jigs, often within arms' reach.

"Another major consideration was to lay out the shop to handle long stock. We centered the tablesaw in the room and turned it at an angle. Doing this allows us to rip long boards and sheet goods in the diagonal formed between the shop's corners."

J. R. Downing
Design Editor

Like most woodworkers, when we decided to set up the IDEA SHOP™, we turned to space available. That was an unfinished 14×28′ room sharing the same roof with a two-car garage. A room that size compares to many basement bays and measures a little larger than a single-car garage.

Even though 14×28′ sounds like a lot of space, fitting a full complement of stationary power tools into the room was challenging. (See the floor plan *below left* for how we situated our tools.) Note that we located the air-handling equipment, dust-collection unit, air compressor, and our lumber-storage bin outside of the shop to conserve space, and for other reasons you'll learn about.

Workstations for big tasks

The sliding compound mitersaw station, shown *below,* sees a lot of action, so we built blade and jig storage above for it and for the tablesaw, too. We also added a cabinet-length table extension and fence, and made a handy pullout scrap bin beneath the saw. Other compartments hold portable electric tools, such as routers, drills, and sanders. And there's plenty of storage below.

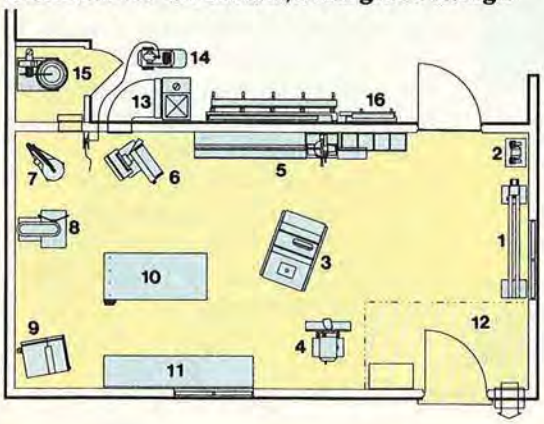
Continuing the workstation concept, cabinets near the lathe, shown *opposite page, right,* hold turning tools and protective equipment such as a face shield and respirator. There's also related storage near the drill press, bandsaw, and scrollsaw.

Air-tool storage also follows the workstation concept, even though the tools would normally be used throughout the shop. How did we manage to do this? In the clamp-wall photo, *opposite page, left,* you'll note the retractable red

Right. **In line with the workstation concept, the sliding compound mitersaw hugs a wall on its own cabinet. The sander, though, sports a mobile base. Note the dust-collection system's drops.**

Opposite page, left. **Tired of searching for clamps? In the IDEA SHOP, we keep a full line at the ready on one wall, with each type having a specialized holder. Better still, they're only a few steps from the assembly workbench (removed from this photo but seen on *page 58*) where needed most.**

Floor-plan. **1. Lathe 2. Grinder 3. Tablesaw 4. Jointer/planer 5. Mitersaw 6. Belt sander 7. Scrollsaw 8. Drill press 9. Bandsaw 10. Assembly workbench 11. Stationary workbench 12. Finishing area 13. Heating/cooling unit 14. Compressor 15. Dust collector 16. Lumber/sheet-goods storage.**



hose reel to the right of the scrollsaw and low to the floor. The cabinet above contains pneumatic tools: When it's time to work with one, we remove it from the cabinet and attach it to the hose. Then, we adjust the pressure and, with the 25′ length of hose, we pull the tool to where it's needed. The hose lies flat on the floor, making it easy to step over.

The use of solid hemlock tongue-and-groove paneling over drywall creates a warm, inviting look throughout the IDEA SHOP™. It in fact contributes to the workstation concept, too. How can that be? The solid wood actually comes in handy for hanging lighter storage units—you don't always have to seek out the studs for a solid anchor. But when it came to hanging the heavy tool cabinets or other organizers, we relied on wall studs for support.

A solution for adaptabilty: mobile machines

Although we positioned the 10″ tablesaw at an angle in the center of the shop to accommodate longer stock, it doesn't have to stay there. Because, like the lathe, bandsaw, jointer/planer, and belt-/disc sander, it rests on a mobile base (the compound-mitersaw, drill press, and scrollsaw don't). Just release the wheels and away you go, ready to tackle the new job at hand.

But, you say, doesn't mobility conflict with the workstation plan? No way. Mobility contributes to the shop's overall efficiency by maximizing the use of each tool. And, the ability to move machines aside lets you quickly and easily clean any sawdust and dirt that accumulates beneath them, without straining your back.

Continued

SHOP SPECS

Compressor, air hose:
3.5 hp model VT6196
Campbell Hausfeld
100 Production Drive
Harrison, OH 45030
800/634-4793

Dust-collection fittings:
3", 4", and 5" snap-lock pipe, elbows, reducers, hoses, blast gates, clamps
Woodworker's Supply Inc.
1108 North Glenn Rd.
Casper, WY 82601
800/645-9292

Floor finish:
Patio gray Latex Trim Enamel
Martin-Senour Paints
101 Prospect Ave. N.W.
Cleveland, OH 44115
800/542-8468.

Floor preparation:
Mar-gon Floor Leveler
United Gilsonite Laboratories
P.O. Box 70, Scranton, PA 185-0070
800/272-3235

Wall Finish:
Heirloom Crystal Clear
McCloskey, Div. of Valspar
7600 State Rd., Philadelphia, PA 19136
800/767-CLEAN

Fluorescent lighting:
Seven 4′ fixtures (No. 11233)
Lithonia Lighting
Box A, Conyers, GA 30307
404/922-9000.

Skylights:
Two model VS ventilating skylights with low-E glass, shades, and power crank
VELUX-AMERICA INC.
P.O. Box 5001
Greenwood, SC 29648
800/283-2831.

Wall paneling:
Western Hemlock Profile Wood
Western Wood Products Association
Yeon Bldg., 522 S.W. Fifth Ave.
Portland, OR 97204-2122
503/224-3930.

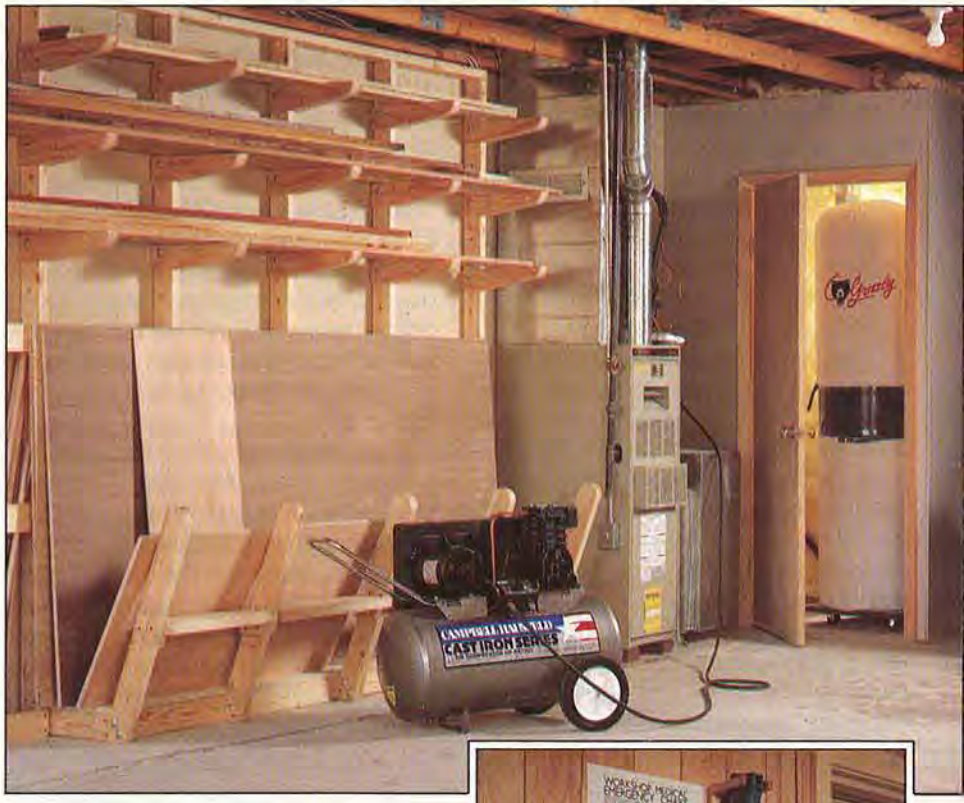
(Sources of specific tools begins on *page 82.*)

Below. **The lathe parallels an end wall of the shop. Its mobile base allows you to swing it out for special turning tasks. Note the portable dust pickup behind the lathe and the turning-tool storage nearby.**

PLAN FOR COMFORT, SAFETY, AND

"Working efficiency shouldn't be the only priority in designing a shop. It should be safe, secure, and comfortable, too. Take noise, for instance. We set up the dust collector outside the IDEA SHOP™ as a remote system. The advantage to that is noise reduction. But a disadvantage in winter is the lost heat pulled from the room. So in our shop, the remote dust collector feeds the withdrawn air back into the room through a filtered vent—much like a furnace's cold-air return—that also picks up the very fine leftover dust."

Design Editor



Our efforts to make the IDEA SHOP comfortable to work in, as well as safe, began with providing ample lighting—natural, from two skylights and two windows, and artificial, from fluorescent ceiling fixtures and incandescent task lights. To cut down on leg strain caused by our shop's unforgiving concrete floor, we added five rubber anti-fatigue mats where there's typically a lot of standing. A cushioned, adjustable-height stool—one of this issue's featured projects (see *page 70*)—lets you take a load off your feet.

Controlling the climate

A shop that's too cold or too hot can take the fun out of woodworking. That's why, for winter heating, we went with a 50,000 Btu Lennox gas furnace installed in the adjacent two-car garage, a few feet behind the wood-storage rack. For summer cooling, a companion compressor sits outside.

By locating the furnace in a separate room, we placed a protective wall between the pilot light and any shop-generated dust and volatile fumes. We took a second precaution by installing a 4"-thick pleated filter inside the furnace's cold-air return.

Our battle for clean air

We zeroed in on controlling dust with the addition of a 2-hp collector. It, too, went into available garage space. But, to provide additional dust and noise protection, we housed the collector in its own insulated closet.

Enclosing the dust collector actually accomplishes two things: a) its buildup of exhaust air (containing fine dust particulates) can reenter the shop clean via a filtered vent, and b) the shop's heated or cooled air is retained.

Our dust-collection system features metal ducting. We chose metal because unlike PVC pipe, it doesn't require a ground wire to prevent a buildup of static charges. We ran the ducting through the accessible attic space to cut down on the amount of exposed ducting. (Note: Metal ducting costs considerably more than PVC pipe, which in most home shops works as well.)

Dust collection in the IDEA SHOP didn't stop there. A mobile air-filtration cabinet—also an outfeed table—removes dust, too. (You'll find plans for this project in Issue 55, October 1992.)

Opposite top. **Against the IDEA SHOP's wall, the lumber-storage rack holds 12' boards and full sheets of plywood.**

Left. **In the finishing area, a fold-down platform with turntable supports small projects when spraying or brushing.**

Opposite below. **The first aid kit, with supplies assembled for a woodworking shop, hangs at recommended eye level.**

Dealing with fumes, flammables, fire, and theft

At the spray-finishing workstation, shown *above*, a filter-shielded, explosion-proof exhaust fan mounted in the wall (above the chair) removes toxic fumes through a 16×16" vent. The finishing area becomes self-contained with a wraparound vinyl curtain which protects the rest of the shop from overspray by spray cans or a conventional spray gun.

In the same area, you'll find two storage cabinets—one OSHA-approved metal unit with double-walled protection for storing flammable liquids, and a second wall-mounted cabinet for painting equipment. Along the adjacent wall there's a red-lidded can for the safe disposal of oily rags and other finish waste.

By each shop door, we wall-mounted an ABC-rated fire extinguisher. And to detect a fire, should one occur, we had two 130° heat sensors installed in the shop's ceiling and connected to our shop security system and alarm. The remaining portions of our hard-wired system include a digital control pad, battery back-up, magnetic contacts at doors, and a motion detector covering the windows and shop area.

First in first aid

To fully cover first aid, we called in industrial medical-supply specialists to customize a kit just for woodworkers. In fact, you can order the kit shown *opposite page* by writing to the Zee Medical address in our Shop Specs.

It contains shop-smart medical items like instant cold compresses for bruises and swelling, barrier cream to guard against possibly irritating woods, eyewash, and a nifty needle-pointed tweezer with magnifying glass, bandages, and antibacterial ointments. Above the metal kit hangs a flashlight for those times when a circuit breaker trips, a posting of emergency numbers, and a cordless speed-dial telephone to call for help, or have a friendly chat with the local lumber man.

SHOP SPECS

Cordless telephone:
Model 5450
AT&T Consumer Products
5 Wood Hollow Rd.
Parsippany, NJ 07054
800/222-3111

Dust collector:
Model G1029, 2-hp
Grizzly Imports, Inc.
See address on *page 82*

Fire extinguishers:
Two 10-pound portables, ABC-rated, no. 5y1014
Ansul Fire Protection
One Stanton St.
Marinette, WI 54143-2542
715/735-7411

Furnace and air conditioner:
Whisperheat Up-Flo 50,000 Btu gas furnace model G20Q3E-50, cooling coil, model DSP-200, condenser Model HS20-261
Lennox Industries, Inc.
P.O. Box 799900
Dallas, TX 75379-9900
(See the Yellow Pages for dealers)

Filters:
MK-80 16x20x4" pleated air filters
Air Filter Sales & Service
108 S.E. 4th St.
Des Moines, IA 50309
800/383-5151

Nonflammable storage:
Cabinet, model 25315, 15 gal.;, oily- waste can, model 9100, 6 gal.; Cease Fire waste receptacle, model 26615, 16 gal.; 1 qt. plunger can, model 10108; ½ pt. dispensing can, model 14004
Justrite Manufacturing Co.
2454 Dempster St.
Des Plaines, IL 60016
800/798-9250

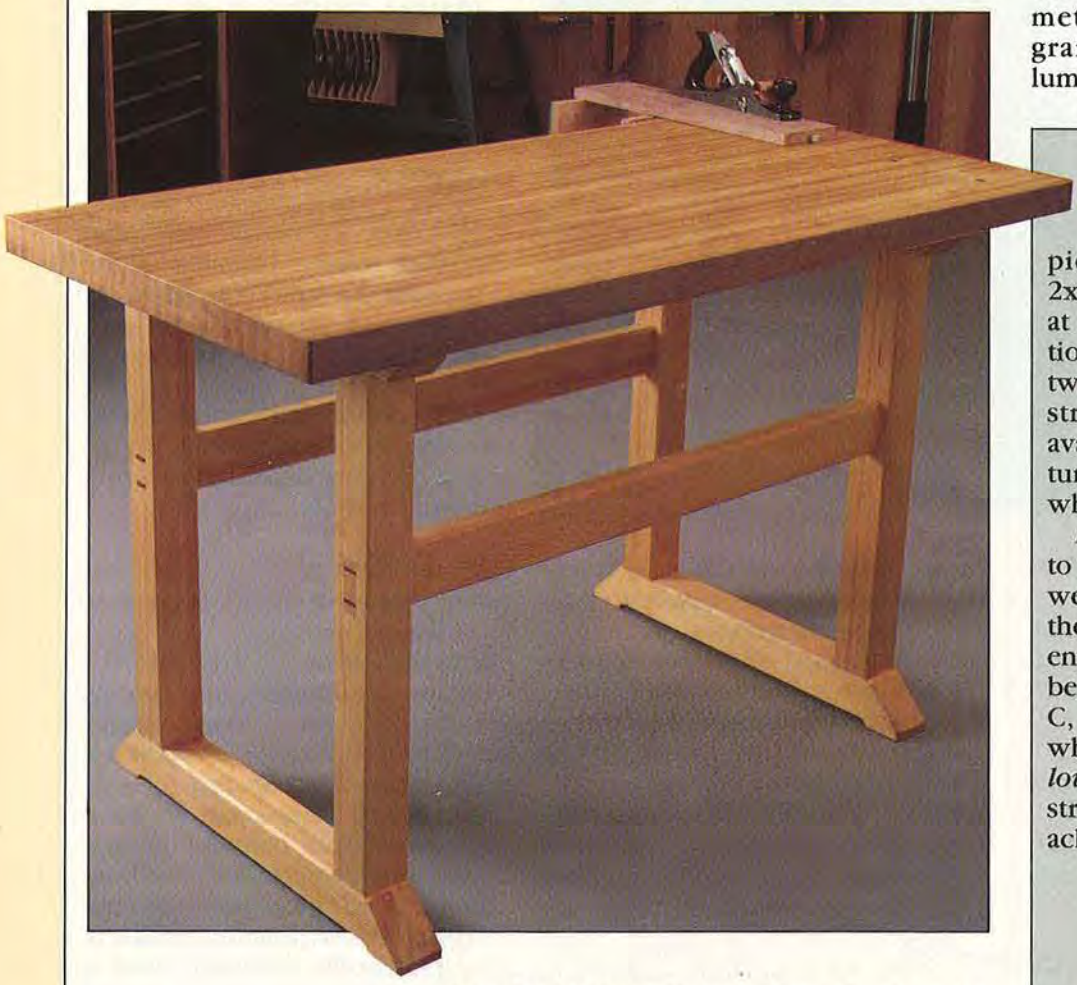
Room ventilator:
Model 12A17D explosion-proof, wall type
Loren Cook Co.
2015 E. Dale St.
Springfield, MO 65803
417/869-6474

Safety:
No. 125 Woodworker's First Aid Kit ($89 ppd., to order see below), face shield, respirator, ear protection
Zee Medical Service Co.
P.O. Box 65753
West Des Moines, IA 50265
800/346-4408

Security system:
Topaz motion detector, control panel, console, recessed contacts, siren, heat sensors
Ademco
165 Eileen Way
Syosset, NY 11791
800/645-7568

Photographs: Wm. Hopkins

A WORKHORSE OF A WORKBENCH



Our IDEA-SHOP™ workbench may be the design you've waited years for. It's simple to build and super strong. We relied on inexpensive lumberyard stock and rugged mortise-and-tenon joinery to construct the base. For the benchtop, we laminated maple to handle a lifetime of workshop activity. And we added bench dogs and a bench vise to expand the usefulness of our workbench, making it a fitting centerpiece for any home workshop. Plus, see the matching stool in the article following this one.

Print this article

Let's build the super-sturdy legs first

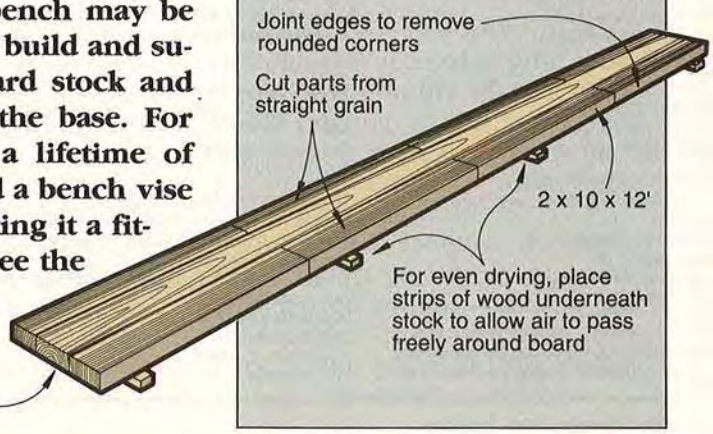
From 1½"-thick, straight-grained pine, rip and crosscut eight pieces 3¼" wide by 33¼" long for the leg blanks. Plane the edges of the stock before ripping it to finished width to remove the rounded corners. (See the box *below* for our method of obtaining straight-grained pieces from common lumberyard 2×10 stock.)

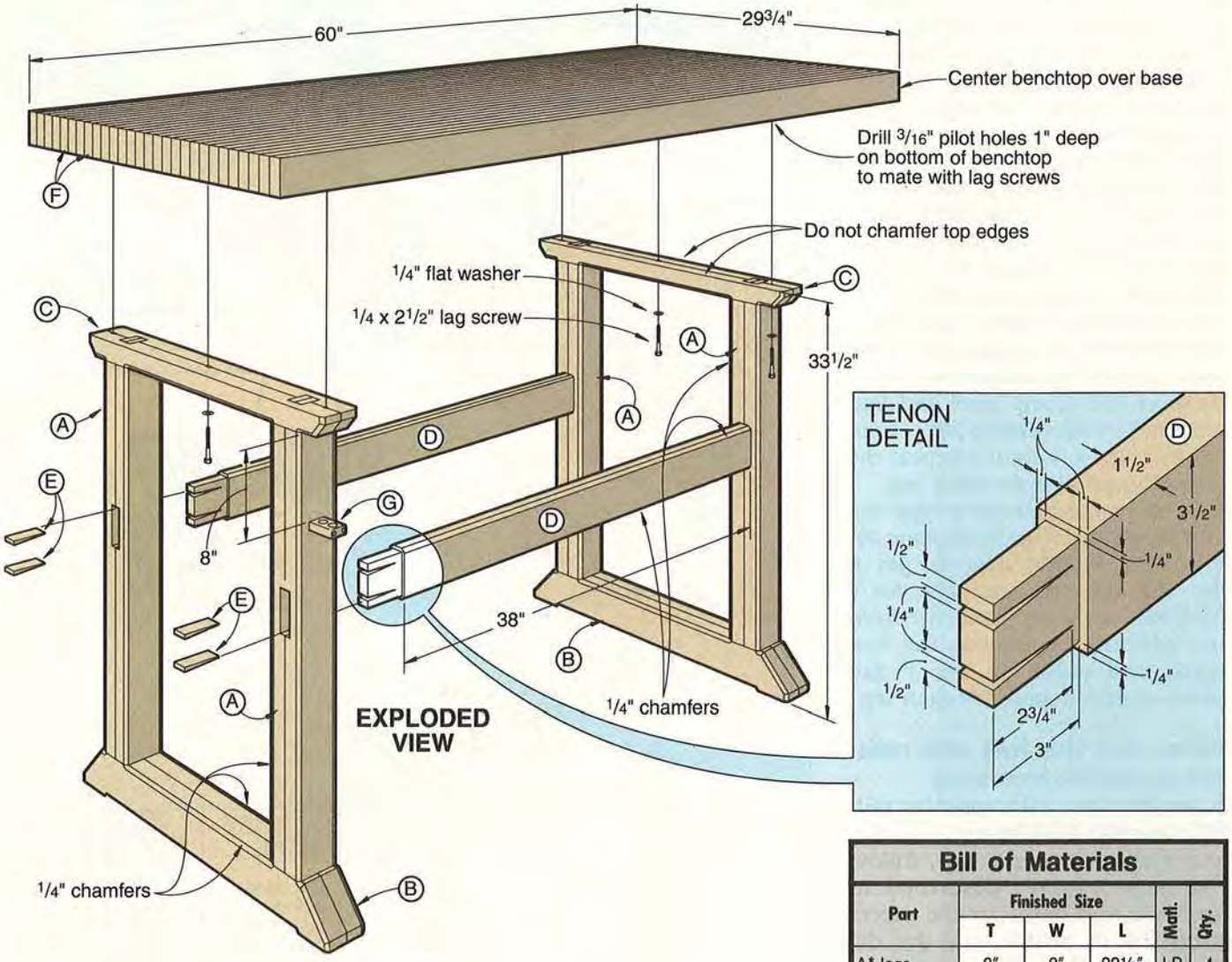
Design Notes

To keep costs down on this project, we hand-picked straight-grained pine 2x10s for the workbench base at a local lumberyard. In addition, we checked each 2x10 for twist and bow, and chose the straightest and driest pieces available. (If you have a moisture meter, take it with you when you shop.)

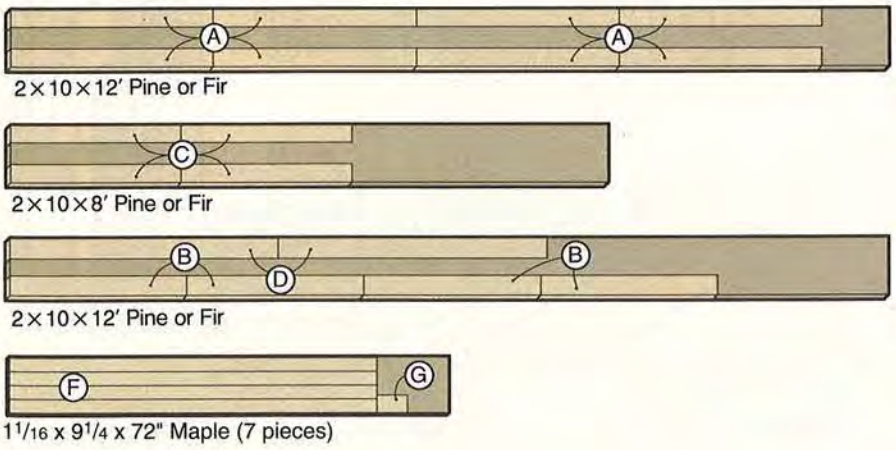
After getting the stock back to the *WOOD* magazine shop, we stickered the boards, and let them acclimate to our indoor environment for several weeks before cutting the parts (A, B, C, D) from along the edges where shown in the sketch *below*. This allowed us to use the straightest grain possible and achieve the best results.

J. R. Downing
Design Editor


Joint edges to remove rounded corners
Cut parts from straight grain
2 x 10 x 12'
For even drying, place strips of wood underneath stock to allow air to pass freely around board
Pith



CUTTING DIAGRAM



Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A* legs	3″	3″	33¼″	LP	4
B* feet	3″	3¼″	29½″	LP	2
C* rails	3″	1½″	28″	LP	2
D stretchers	1½″	3½″	44″	P	2
E* wedges	⅜″	1″	3¼″	DH	8
F* top pieces	1 1/16″	2¼″	60″	M	28
G dog holder	1 1/16″	1¾″	2⅝″	M	1

*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Material Key: LP–laminated pine, P–pine, DH–dark hardwood, M–maple

Supplies: 3–½″ all-thread rods 27¼″ long, 6–½″ nuts, 6–½″ flat washers, 6–¼ × 2½″ lag screws, ¼″ flat washers, clear finish.

WORKBENCH

2 Cut a 3" dado ½" deep 18¾" from the bottom end of each leg blank where shown on the Mortise detail accompanying the End-Frame Assembly drawing.

3 Cut a 1×3×6" spacer to temporarily fit in the mating dadoes of two leg blanks where shown on the drawing at *right*. With the spacer between the pair of dadoes and the edges of the leg blanks flush, glue and clamp the pieces together. Then, remove the spacer before the glue dries. (We used pieces of scrapwood stock between the clamp jaws and legs to prevent the metal jaws from denting the softwood.) Repeat the clamping process for each leg.

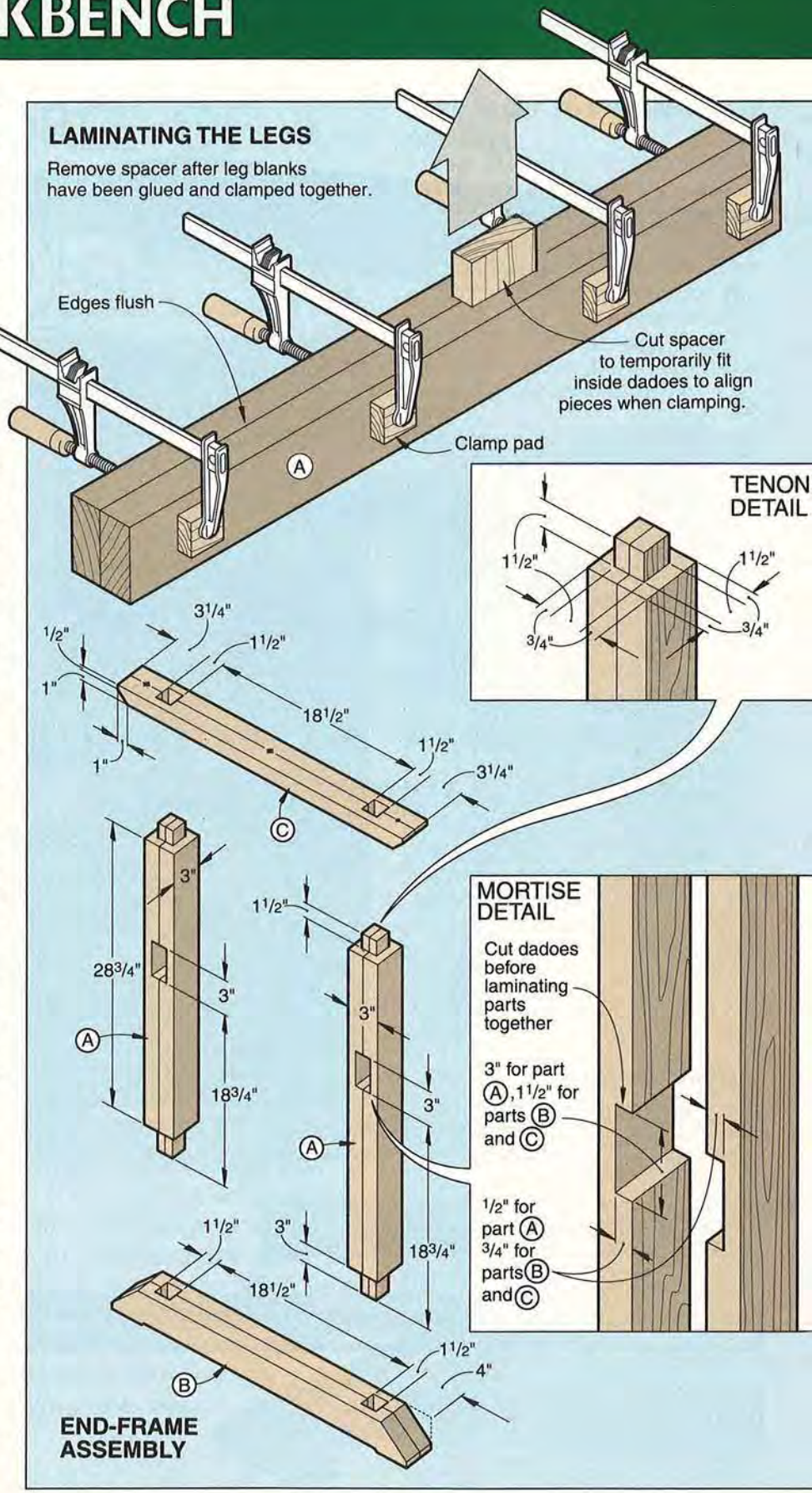
4 Remove the clamps, scrape the glue from one edge, and plane ⅛" from the scraped edge to get it flat. Rip the opposite edge for a 3⅛6" width. Next, plane ⅛6" from the cut edge to remove the saw marks and to obtain the 3" finished width. Repeat for each leg.

Now, add the feet and rails for a wobble-free base

1 For the feet (B) and the rails (C), see the End-Frame Assembly and Parts View drawings, follow the same method described to form the legs (A). Cut the pieces oversized in width, cut the dadoes, glue the pieces together with the dadoes and edges of the boards aligned, and then trim to finished width.

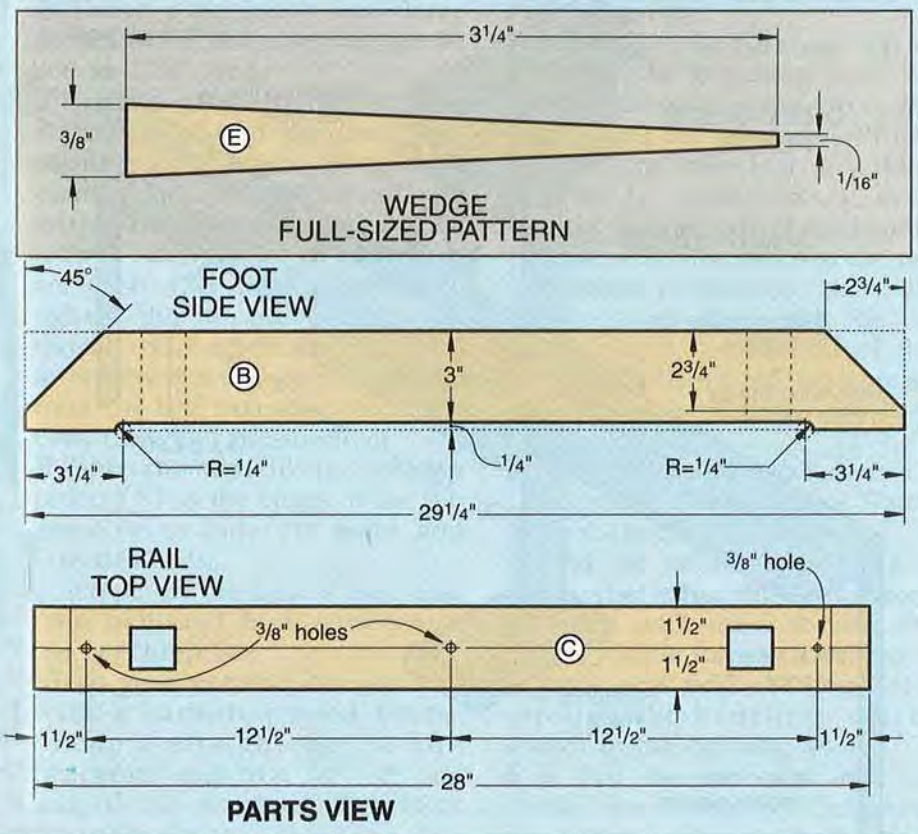
2 Clamp the two feet (B) bottom edge to bottom edge. Mark a centerpoint 3¼" from each end of the clamped-together feet. Now, use a compass to mark a ½" hole (¼" radius) at each centerpoint. Draw straight lines to connect the edges of each circle where shown in photo A on the *opposite page*.

3 Mark a 45° cutline across the end of each leg where shown on the Parts View drawing. Do the same thing to the ends of the rails where shown on the End-Frame Assembly drawing.



Clamp the feet together, and drill a ½" hole at the marked centerpoints to form the radiused bottoms.

Tap the hardwood wedges into the notches. After the glue dries, trim the wedges flush with the legs.



4 As shown in photo A, drill a ½" hole at each marked centerpoint. Remove the clamps, and bandsaw between the holes along the inside edge of the marked line. Sand to the line to remove saw marks.

5 Using the dimensions on the End-Frame Assembly and Parts View drawings, miter-cut (we used a bandsaw) both ends of each foot (B) and both ends of each rail (C). Sand smooth.

6 Drill a trio of ⅜" holes in each rail (C) where shown on the Parts View drawing.

Next, let's assemble the base

1 Mount an auxiliary wood fence to your miter gauge and a dado blade to your tablesaw. Cut tenons to the sizes shown on the End-Frame Assembly drawing and accompanying Tenon detail.

2 Glue and clamp each end frame together, checking for square.

3 Rout ¼" chamfers along the edges of the end frames where shown on the Exploded View drawing.

4 Cut the stretchers (D) to size. Cut a 3"-long tenon at each end of each stretcher to fit snugly through the leg mortises.

5 Rout a ¼" chamfer along the edges of the stretchers between the tenons.

6 Using the Tenon detail accompanying the Exploded View drawing, bandsaw a pair of V-shaped notches in each tenon.

7 Cut eight wedges (E) to the size shown on the Parts View drawing. (For contrast against the light pine, use a dark-colored hardwood for the wedges; we choose genuine mahogany.)

8 Glue and clamp the stretchers in place between the end frame assemblies. Inject a bit of glue in each notch, and using a mallet, tap the wedges into the notches, and check for square.

9 Being careful not to mar the surface of the leg, trim the wedges flush as shown in photo B.

Continued

Build a top that can take a pounding

Note: You either can laminate your own maple top as described below or substitute a solid-core door from a local lumberyard or homecenter. Ask to find out if the company has any doors that customers have rejected because of mistakes in staining or cutting. You can purchase these for a fraction of their retail cost. Avoid doors rejected because of warpage.

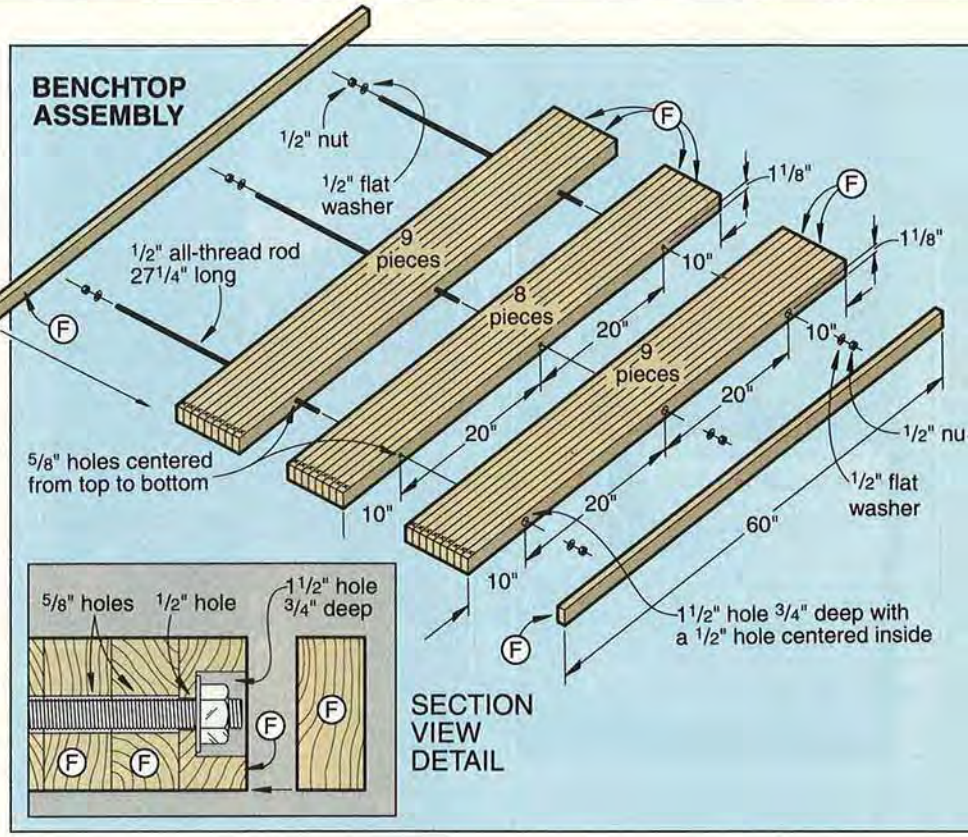
1 Cut 28 pieces of 1 1/16"-thick maple (F) to 2 1/4 × 61" for the laminated top. For reference when drilling and laminating later, mark an X on the best (defect-free) edge (not face) of each strip.

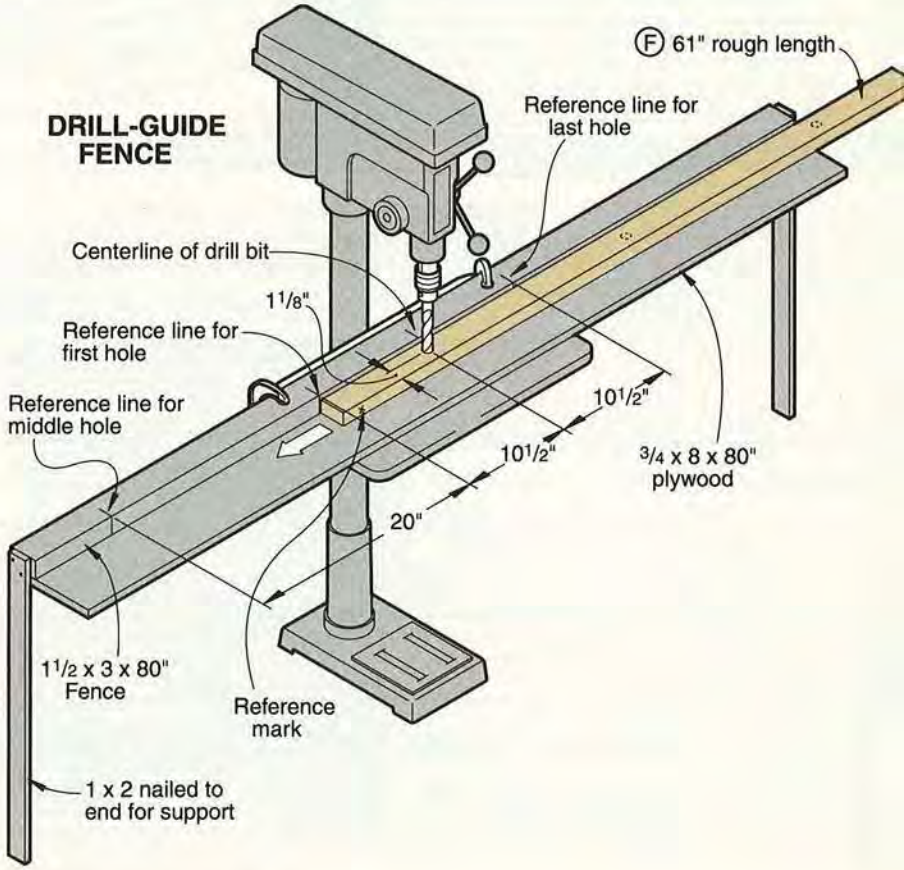
2 Using the drawing at *right, below* for reference, construct and attach a long fence to your drill press to ensure consistently spaced holes. Add a support to each end. Mark the reference marks on the fence where shown on the drawing.

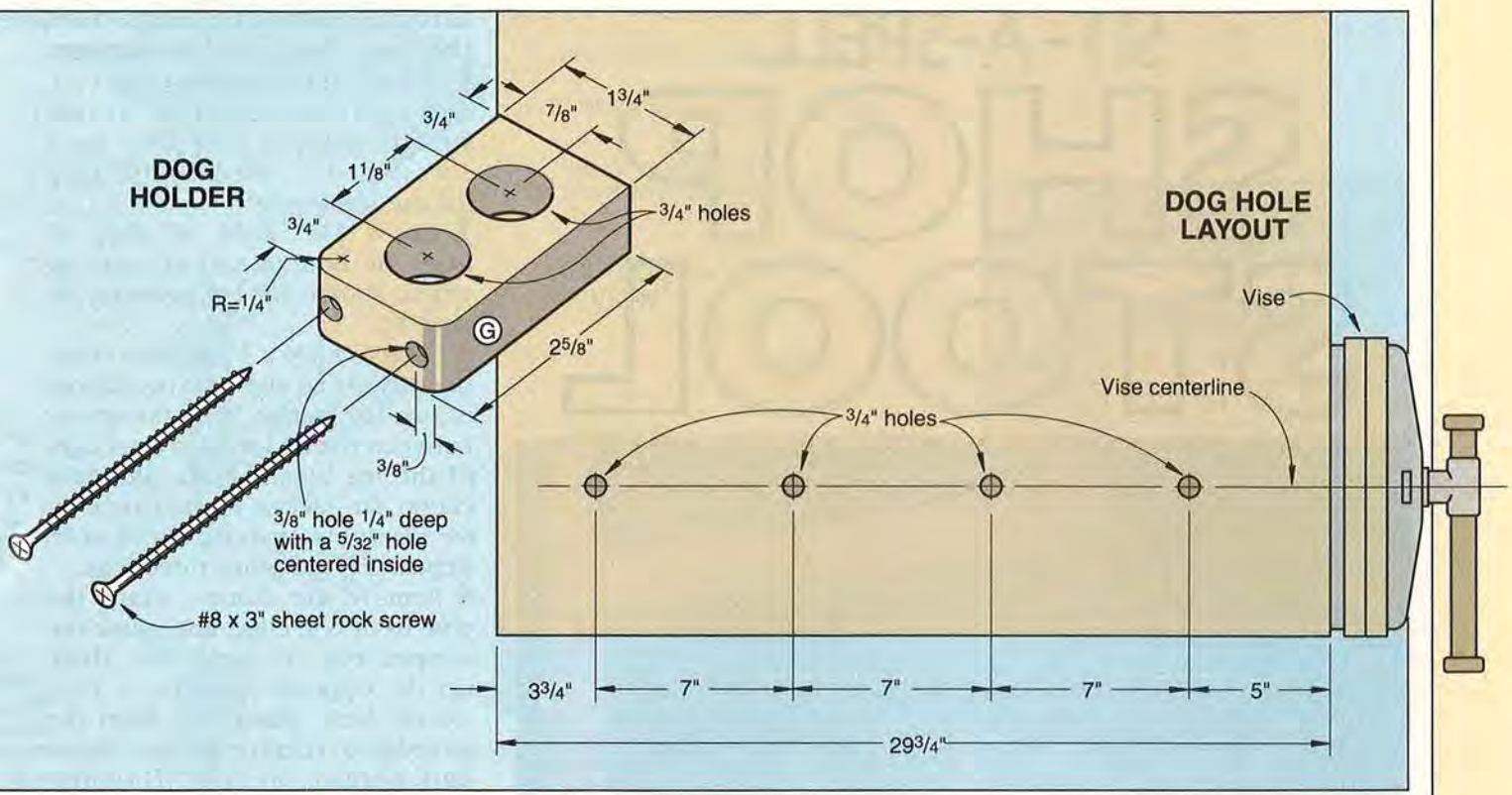
3 With the marked edge facing out, align the ends with the reference marks on the fence, and drill three 5/8" holes in 24 of the 28 benchtop pieces (F).

4 Still using the fence and your marks, drill three 1 1/2" holes 3/4" deep with a 1/2" hole centered inside each 1 1/2" hole in two of the remaining four pieces.

5 Glue and clamp eight of the predrilled pieces (F) face-to-face, with the edges and ends flush, the 5/8" holes aligned, and the Xs facing up. Next, glue and clamp two nine-piece sections together in the same manner. Each of the nine-piece sections should have a strip with the 1 1/2" holes on one outside edge. See the Top Assembly drawing for reference. (We found it easier to laminate three sections, and then glue and clamp the three sections together to form the top.) You should still have two maple strips (F) with no holes in them.







6 Using a hacksaw, cut three pieces of ½"-diameter all-thread rod to 27¼" long.

7 Spread glue on the mating edges, and clamp the three sections edge-to-edge, using pipe clamps and the all-thread rod with nuts and flat washers attached. Check that the surfaces are flush. (We used a ratchet to tighten the ½" nuts on the all-thread rod.) Alternate back and forth between the clamps and the nuts on the threaded rods for even clamping pressure.

8 Glue the remaining two top pieces (F) to the edges of the top assembly to hide the holes and threaded rods.

9 Scrape off the excess glue, and then belt-sand both surfaces of the benchtop flat.

10 Fit your portable circular saw with a carbide-tipped blade. Clamp a straightedge to the benchtop, and trim ½" off one end of the benchtop. Repeat at the other end.

Finishing up

1 Finish-sand the base and top.

2 Center the benchtop assembly on the base. Clamp the top to the base. Using the previously drilled holes in the rails (C) as guides, drill six 3/16" pilot holes 1" deep into the bottom side of the benchtop assembly. The holes in the rail are slightly oversized to allow the lag screws to move with the expansion and contraction of the benchtop. Using ¼" lag screws and flat washers, fasten the base to the top.

3 Add the finish to all surfaces. (We applied three coats of Watco Natural Danish Oil Finish.)

4 Drill the mounting holes, and add a vise using the instructions provided with the vise (see the Buying Guide for our source).

5 Mark and drill ¾" dog holes through the benchtop where shown in the drawing *above*.

6 If you use the same type of round bench dogs we did, mark the layout for the dog holder (G) on a piece of 1 1/16" maple. Mark the centerpoints for the dogs and the mounting screws. Bore the holes for the dogs, and then cut the dog holder to shape. Next, drill the mounting holes, sand smooth, and apply the finish. Finally, screw the dog holder to the leg nearest the vise.

Buying Guide

- **Woodworker's Vise.** Cast-iron jaws, predrilled mounting holes, 34 lbs., with retractable "dog," catalog no. 9GT51785, $84.99. Available at or order through Sears stores nationwide.
- **Round bench dogs.** Two, with wire springs allowing for height adjustment. Catalog no. 827116. $24.45 ppd. Woodworker's Supply, Inc., 5604 Alameda Place NE, Albuquerque, NM 87113. Or call 800/645-9292 to order.

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: Wm. Hopkins
Illustrations: Kim Downing

SIT-A-SPELL SHOP STOOL

A rotating cover holds the seat-adjustment dowel in place.

If you're one of those woodworkers who spends every spare minute working in your shop, you're going to love this shop stool. The padded seat makes it a joy to sit on. And with the special height-adjustment system we've designed into it, you can raise or lower the seat to suit your height and the surface you're working at.

Cut and laminate pieces for the legs, feet, and stretchers

1 To form the laminated legs (A), cut eight pieces of ¾"-thick, straight-grained pine (we used 1×4s) to 1¾" wide by 19" long for the leg blanks.

2 Cut a 1½" dado ¼" deep 8" from the bottom end of each leg where shown on Leg drawing on *page 73*.

3 Cut a ⅜×1½×3" spacer to temporarily fit in the mating dadoes of two leg blanks. With the spacer between the dadoes and the edges of the leg blanks flush, glue and clamp the pieces. Immediately after clamping, remove the spacer. Repeat for the other three legs.

4 Remove the clamps, scrape the glue from one edge, and plane the scraped edge to get it flat. Then, rip the opposite edge for a 1⁹⁄₁₆" width. Next, plane 1⁄16" from the cut edge to remove the saw marks and obtain the 1½" finished width. Repeat for the other legs.

5 Follow the method described in steps 1–4 above to make the feet (B). Cut the pieces oversized in width, cut the dadoes, glue the pieces together, and then trim. Repeat the process (minus the dadoes) for the stretchers (C).

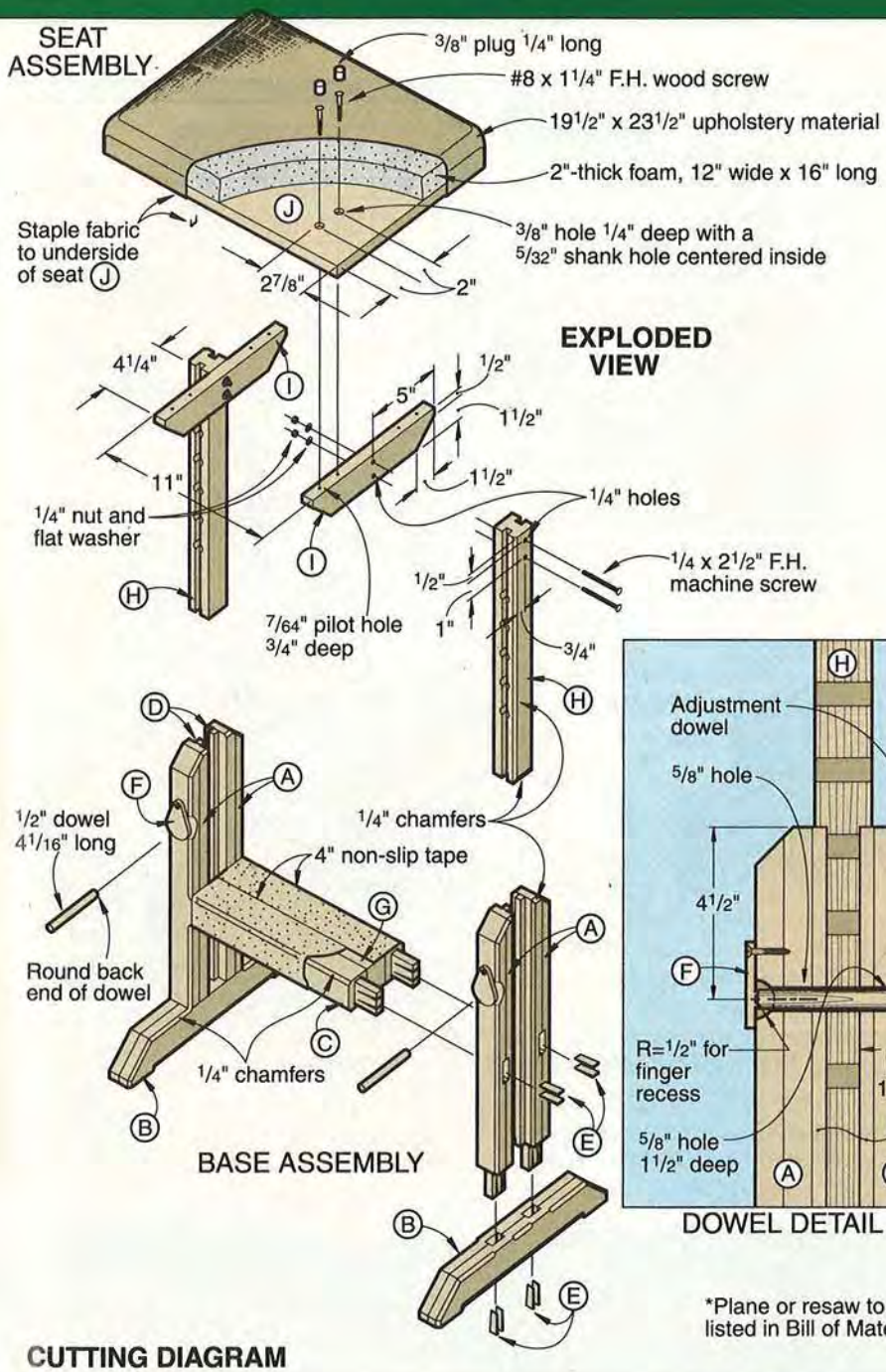
Finish machining the legs, feet, and stretchers

1 Mount an auxiliary wood fence to your miter gauge and a dado blade to your tablesaw. Using the dimensions on the Tenon detail accompanying the Stretcher Assembly drawing, cut tenons on the bottom ends of the legs and both ends of the stretchers.

2 Using the dimensions on the Tenon detail, bandsaw a pair of V-shaped notches in each tenon in the stretchers and legs.

3 With the dimensions on the Leg drawing, angle-cut the top end of each leg. Use the dimensions on the Foot drawing and accompanying Foot End detail to angle-cut both ends of each foot.

Continued



Bill of Materials

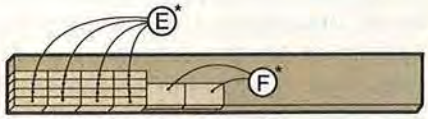
Part	Finished Size T	W	L	Matl.	Qty.
BASE ASSEMBLY					
A* legs	1½"	1½"	19"	LP	4
B* feet	1½"	2¼"	14"	LP	2
C* stretchers	1½"	2"	14"	LP	2
D guides	⅜"	⅜"	17"	P	4
E wedges	3/16"	½"	2¼"	DH	16
F covers	¼"	1⅜"	2¼"	DH	2
G* spacer	1½"	2"	11"	LP	1
SEAT ASSEMBLY					
H* posts	1½"	1½"	17"	LP	2
I rails	¾"	2"	10"	P	2
J* seat	¾"	12"	16"	EJP	1

*Initially cut parts marked with an * oversized. Then, trim each part to the finished size according to the how-to instructions.

Material Key: LP–laminated pine, P–pine, DH–dark hardwood, EJP–edge-joined pine

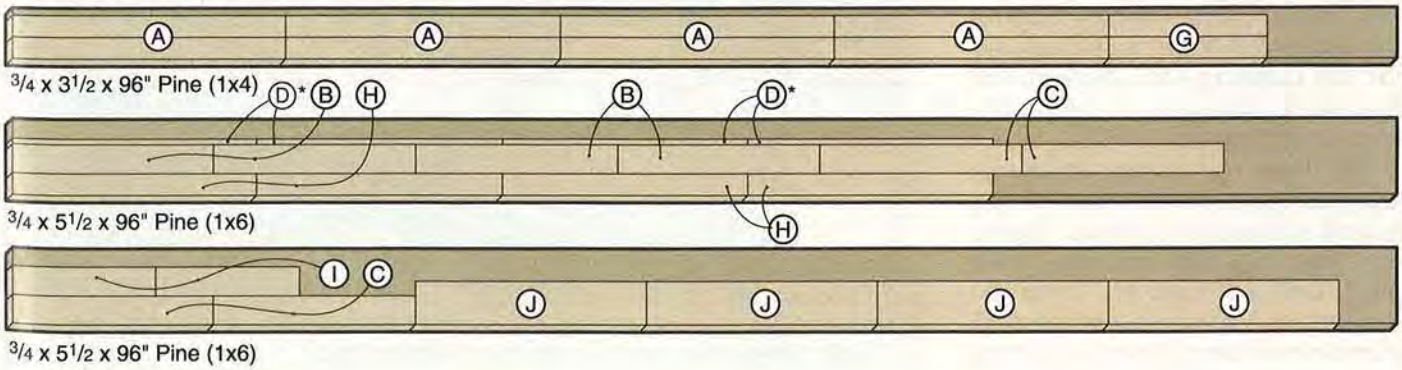
Supplies: #8×1¼" flathead wood screws, 4–¼×2½" flathead brass machine screws with flat washers and nuts, ½" dowel stock, non-slip tape, 2"-thick foam, upholstery material, staples, clear finish.

*Plane or resaw to size listed in Bill of Materials.



1/2 x 3 1/2 x 24" Mahogany

CUTTING DIAGRAM



SHOP STOOL

4 Clamp (without glue) the feet (B) bottom edge to bottom edge. Mark a centerpoint 2¼" from each end of the legs. Use a compass to mark a ½" hole at each centerpoint. Draw lines to connect the edges of each marked circle.

5 Drill a ½" hole at each marked centerpoint. Remove the clamps, and bandsaw out the waste between the holes, cutting just inside the marked lines. Sand to the lines to remove the saw marks and finish shaping each recess.

It's time to assemble the stool base

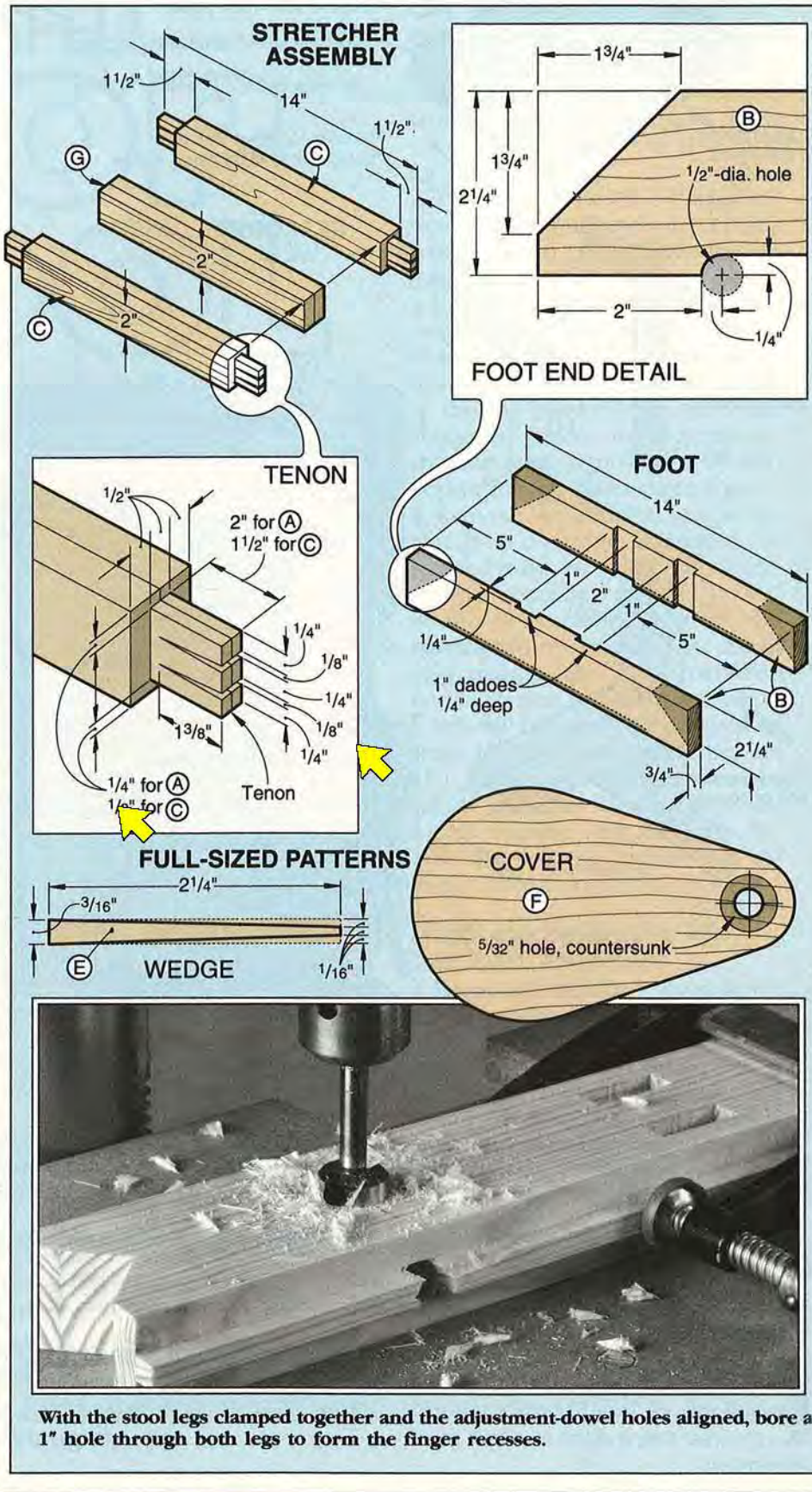
1 Cut the four guides (D) to the size stated in the Bill of Materials. With the ends flush and the guide centered from side to side, glue and clamp one guide to each leg. See the Guide detail accompanying the Leg drawing for reference.

2 Transfer the full-sized wedge pattern (E) to ½"-thick dark hardwood (we chose mahogany), and cut 16 wedges to shape.

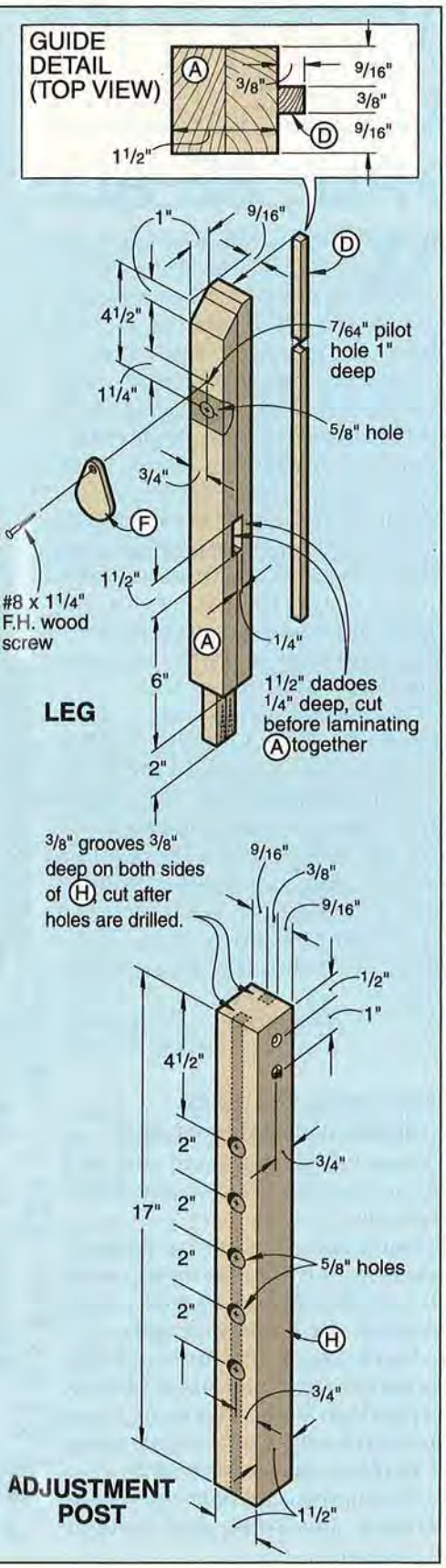
3 Next, transfer the hole cover pattern (F) and hole centerpoint to ¼"-thick stock. Cut the covers to shape, drill and countersink a 5/32" mounting hole in each, and set them aside for now. Fastened to the legs later, the covers prevent the dowels from sliding out when you move the stool around.

4 To bore the adjustment-dowel holes, dry-clamp a pair of legs together with the tenoned ends flush and the guides (D) mating and flush. Using a brad-point bit, bore a ⅝" hole where shown in the Dowel detail accompanying the Exploded View drawing and the Leg drawing. Drill through the first leg/guide and 1½" into the second leg/guide.

5 To form the finger recesses, clamp the two front legs with the bored sides face-to-face, holes aligned, and the tenoned ends flush. Drill a 1" hole 4½" from the top end and centered over the ⅝" adjustment-dowel holes as shown in the photo at *right*.



With the stool legs clamped together and the adjustment-dowel holes aligned, bore a 1" hole through both legs to form the finger recesses.



6 Glue and clamp the stretchers (C) between the legs (A), checking for square. Inject a bit of glue in each notch, and using a mallet, tap the wedges into the notches. Again, check for square.

7 Glue and clamp the feet (B) to the bottom ends of the legs (A). Glue and drive the wedges.

8 Being careful not to mar the surfaces of the leg, trim and sand the wedges flush.

9 Measure the opening between the stretchers (C), and cut the spacer (G) to fit. (Since we were already using ¾" stock, we laminated two pieces and then trimmed the laminated piece to size.) Glue the spacer in place.

10 Rout ¼" chamfers along the edges of the base pieces where shown on the Exploded View drawing.

Let's add the adjustable seat

1 Laminate ¾" stock, and trim the adjustment posts (H) to size.

2 Mark the centerpoints for the ⅝" holes on the surface (not edge) where shown on the Adjustment Post drawing, and bore the five holes through each post.

3 Rout ¼" chamfers along the edge and bottom ends where shown on the Exploded View.

4 Cut or rout a ⅜" groove ⅜" deep centered over the ⅝" holes on both sides of each post. Test the fit of each post on the guides between each pair of legs; the posts should slide easily up and down on their mating guides. If not, slightly enlarge the grooves.

5 Cut the seat rails (I) to size, angle-cutting the ends where dimensioned on the Exploded View drawing. Drill a pair of ¼" holes through each rail where shown on the Adjustment Post drawing.

6 Edge-join ¾" stock, and cut the seat (J) to size.

7 With the top edges flush, glue a rail to the inside face of each post (H), checking for square. Using the previously drilled ¼" holes in the rails as guides, drill ¼" holes through the posts. Strengthen each rail/post joint with a pair of ¼ × 2½" flathead machine screws.

8 Cut a pair of ½" dowels 4 1/16" long. For easy insertion into the legs later, sand a round-over on one end of each dowel.

Fasten the seat to the adjustable posts

1 Insert the adjustment posts between the legs, adjust to the same level, and insert the dowels.

2 Center, then glue and clamp the seat to the rails.

3 To further secure the seat to the rails, drill eight ⅜" holes ¼" deep where shown on the Exploded View drawing, centered over the rails. Drill a shank hole through the seat and a pilot hole into the rail as dimensioned on the Exploded View. Drive #8 × 1¼" wood screws through the holes.

4 Using a ⅜" plug cutter, cut eight plugs from 5/16" stock. Glue the plugs in place, and sand the protruding ends of the plugs flush with the top surface of the seat.

Cleanup before taking a seat

1 Disassemble the loose parts and sand the base, seat assembly, and covers (F) smooth.

2 To protect the stretchers, apply non-slip tape.

3 Mask the non-slip tape, and apply a clear finish to the parts (we used satin polyurethane).

4 For an exposed wood seat, rout a ⅜" round-over along the seat's top edge. Or, for a cushioned seat, have a piece of 2"-thick foam cut to size, cover it with upholstery material, and staple the material to the bottom of the seat.

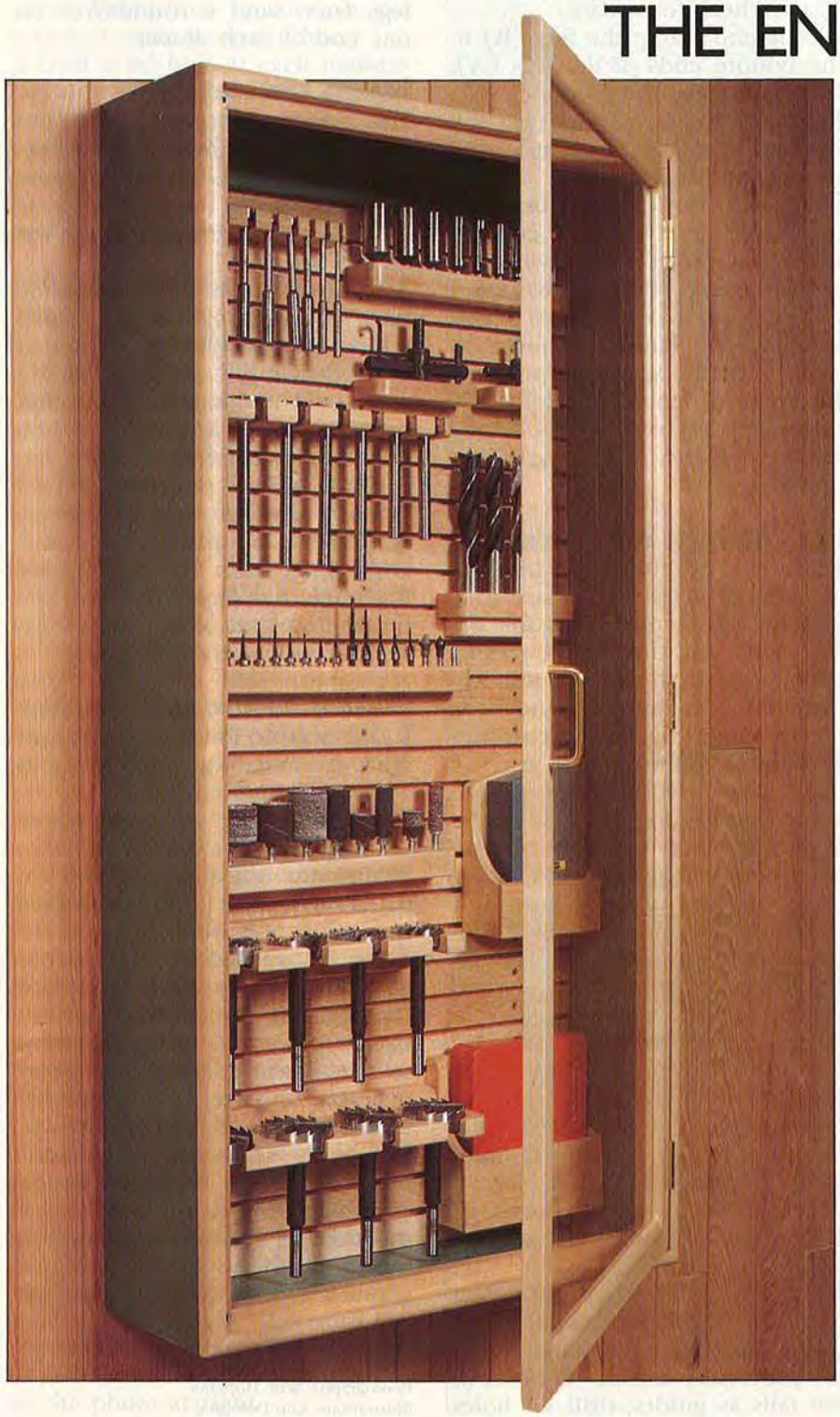
5 Slide the seat assembly's adjustment posts into the base. Fasten the covers (F) to the base. Raise the stool to a comfortable seating height, insert the dowels, and give yourself a well-deserved break.

Produced by Marlen Kemmet
Project Design: Dave Ashe
Photographs: Wm. Hopkins
Illustrations: Kim Downing

Print this article

UNIVERSAL WALL-

THE END-ALL, BE-ALL



When we decided to build the IDEA SHOP, we wanted every component to be fresh, new, and above all practical. With that in mind, I put my engineering background to work and designed a wall-cabinet system that works great for organizing hand tools, safety equipment, power-tool accessories, and much more. The cabinets go together quickly, they won't cost you an arm and a leg, and the acrylic inserts in the doors allow you to spot your well-organized tools in a jiffy, and keep dust away from them, too.

On the following pages, we'll show you how to build a 2×4′ cabinet. (For cabinets with different dimensions, see the sizing guidelines at *right*.) On *pages 78* and *79*, we'll explain the method Jim Boelling, our Project Builder, used to design the tool holders in our cabinets. Turn to *page 32* for plans to build the Forstner bit holders.

Marlen Kemmet
How-To Editor

Start with the back and the mounting strips

1 From ½" plywood, cut the back (A) to the size listed in the Bill of Materials.

2 Using the drawing on *page 75*, bevel-rip the 29 mounting strips (B) to size from ½"-thick stock. Crosscut the strips to length.

3 Mark the screw-hole centerpoints where dimensioned on the Exploded View drawing, and then drill and countersink a trio of shank holes in each strip.

4 To ensure consistent spacing between the strips and smooth-

CABINET SYSTEM

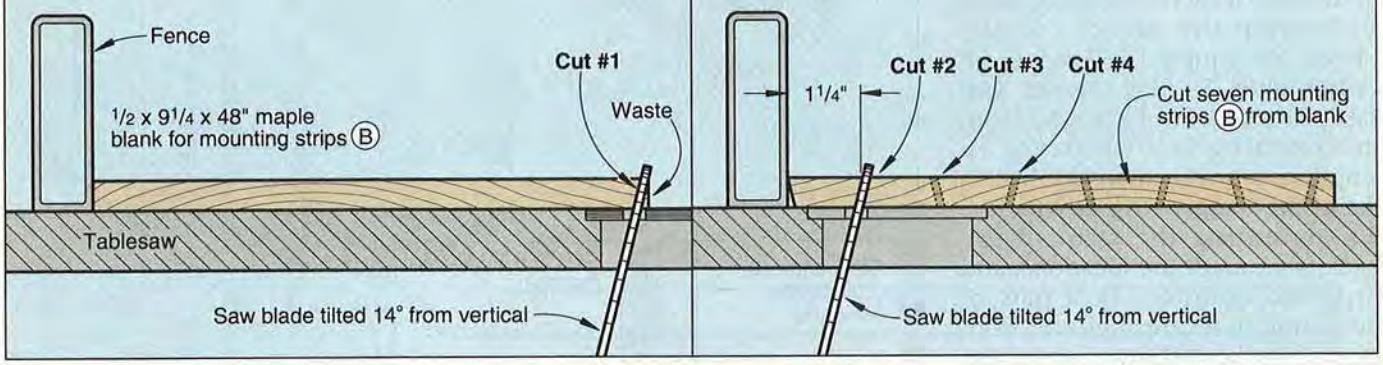
SOLUTION TO SHOP CLUTTER

How to size cabinets to suit your needs

The cabinet we show on the opposite page measures 2×4′. But as you can see on *page 58*, we've built various-sized cabinets for such things as our measuring and marking tools, lathe tools, air-powered tools, and hand planes, to name a few. To help size your custom cabinets, follow these planning guidelines:

- Gather together the tools or other items you want to store in a special-purpose cabinet. Then, lay out the items on a large piece of plywood. This will give you a rough idea of how large to make the cabinet's back.
- If making your cabinet shorter or longer than the model shown, do so in 1½″ increments to allow for each mounting strip and a ¼″ gap added or subtracted.
- Also, if you widen a cabinet and the door becomes wider than it is tall, we recommend using two doors.
- Finally, make the depth of the cabinet equal to the width of the widest tool to be stored in the cabinet plus 1½″.

BEVEL-RIPPING THE MOUNTING STRIPS



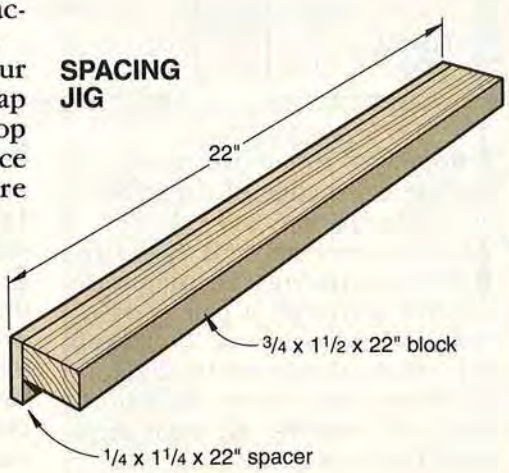
sliding components, build a spacing jig like that shown at *right*.

5 Clamp the back (A) to your workbench. Cut a piece of scrap measuring 2¼×22″. With the top edges flush, clamp the scrap piece to the top of the back where shown in the photo *far right*.

6 Starting flush with the bottom edge of the scrap strip (2¼″ from the top edge of the back), glue and screw the first mounting strip (B) to the back where shown in the photo. See the Mounting detail accompanying the

Continued

SPACING JIG



Glue and screw the maple mounting strips to the plywood back, using the spacing jig for consistent gaps.

WALL-CABINET SYSTEM

Exploded View drawing for reference. Check that the ends of the mounting strip are flush with the outside edges of the back. Use only a small amount of glue to avoid squeeze-out. Immediately wipe off excess glue with a damp cloth. *Caution: glue left between the mounting strips can prevent the tool holders from sliding easily in the dovetail grooves later.*

7 To ensure consistent gaps between the mounting strips, use the spacing jig as shown on the *previous page*. Working from the top down, glue and screw all the mounting strips to the back.

Now, construct the basic cabinet assembly

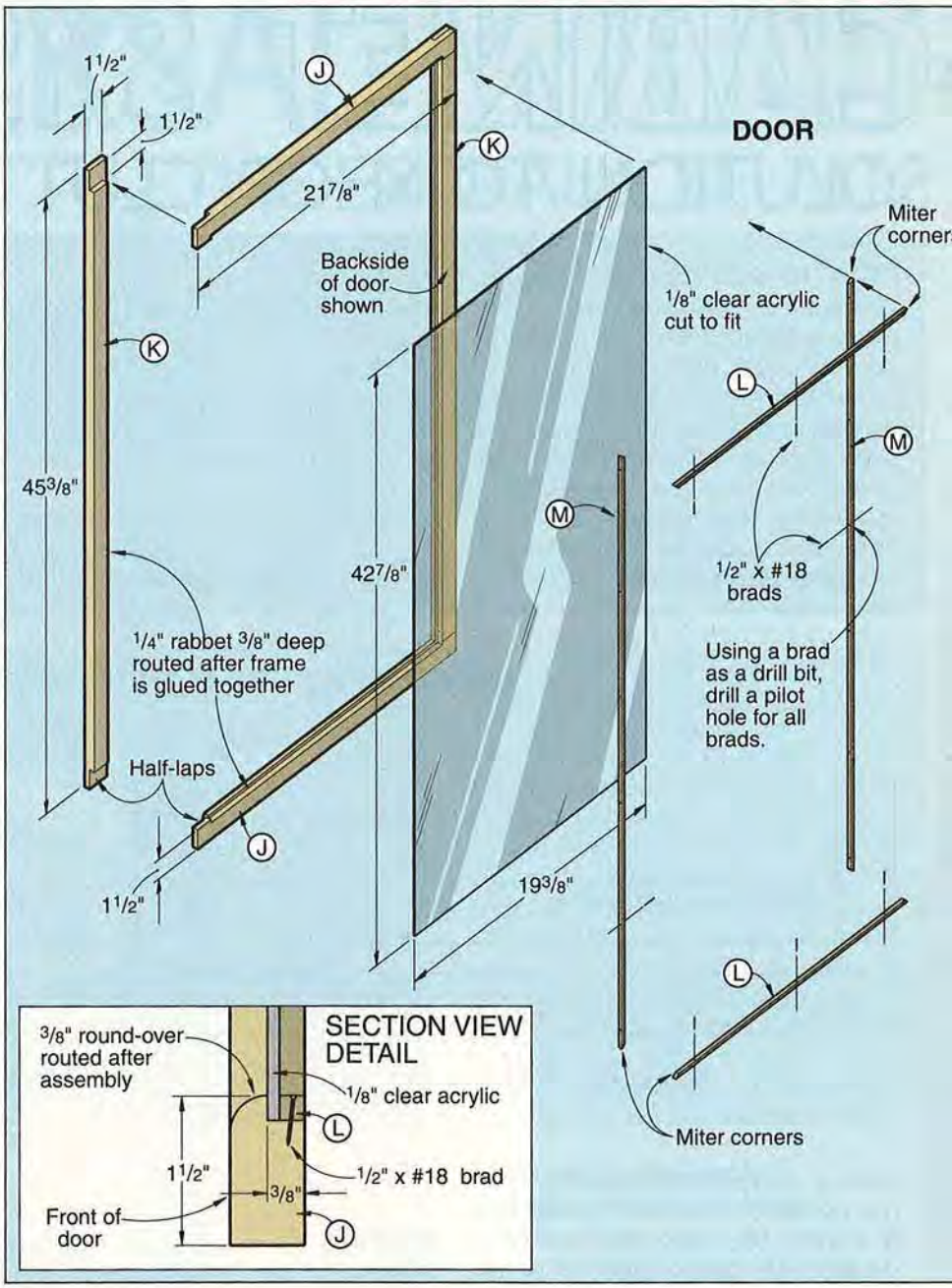
1 Cut the cabinet sides (C) and top and bottom (D) to the sizes listed in the Bill of Materials from ¾" birch plywood.

2 Cut a ¾" rabbet ½" deep across both ends of each side piece. Glue and clamp the pieces (C, D). Check for square, and wipe off excess glue. So the cabinet will easily fit onto the back (A) later, the opening is 1/16" larger in length and width than the back.

3 Cut the hanger strip (E) to size. For mounting the strip to the back later, mark the locations, and drill and countersink a pair of mounting holes through the front face of E where shown on the Exploded View drawing.

4 Glue and clamp the hanger strip to the bottom of the cabinet top (D), ½" in from the back edge. See the Mounting detail accompanying the Exploded View drawing for reference. Drill three mounting holes through the cabinet top, centered into the top edge of the hanger strip (E). Drive a #8 × 1¼" wood screw through each hole just drilled.

5 Rip and miter-cut the face-frame strips (F, G) to size. Glue and clamp them to the front of the cabinet. Sand the strips flush with the cabinet frame.



6 Rout a ⅜" round-over along the outside front edge of the cabinet assembly (parts F and G).

7 Cut the door stops (H, I) to size.

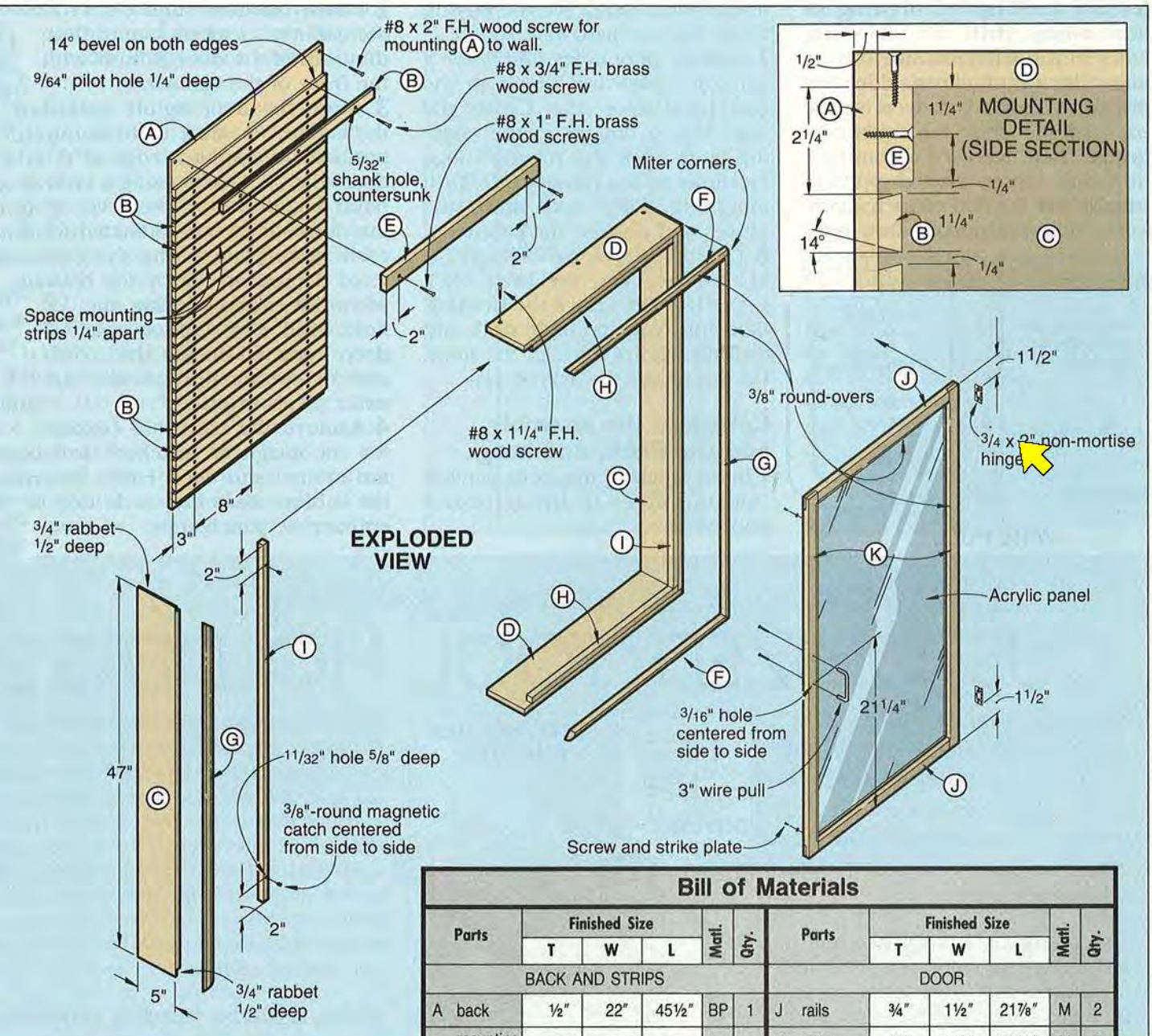
8 For mounting the magnetic catches later, drill a pair of 11/32" holes ⅝" deep in one door stop (H) where shown on the Exploded View and Catch drawings. Hold off installing the door stops until final assembly.

For an open and shut case, add the door

1 Cut the maple door rails (J) and stiles (K) to size.

2 Cut 1½"-long half-lap joints on the ends of each rail and stile.

3 Glue and clamp the door frame members together, checking for square and making sure the frame clamps flat. Later, remove the clamps and sand the door smooth.



Bill of Materials

Parts		Finished Size T	W	L	Matl.	Qty.
BACK AND STRIPS						
A	back	½"	22"	45½"	BP	1
B	mounting strips	½"	1¼"	22"	M	29
CABINET FRAME						
C	sides	¾"	5"	47"	BP	2
D	top/ bottom	¾"	5"	23"	BP	2
E	hanger strip	¾"	2"	22"	M	1
F	face strips	¾"	¾"	23½"	M	2
G	face strips	¾"	¾"	47"	M	2
H	door stops	¾"	¾"	22"	M	2
I	door stops	¾"	¾"	44"	M	2

Parts		Finished Size T	W	L	Matl.	Qty.
DOOR						
J	rails	¾"	1½"	21⅞"	M	2
K	stiles	¾"	1½"	45⅜"	M	2
L	stops	¼"	¼"	19⅜"	M	2
M	stops	¼"	¼"	42⅞"	M	2

Material Key: BP–birch plywood, M–maple

Supplies: #8×1¼" flathead wood screws, #8×2" flathead wood screws, #8×1" flathead brass wood screws, #8×¾" flathead brass wood screws, ⅛" clear acrylic, ½"x#18 brads, paint, clear finish.

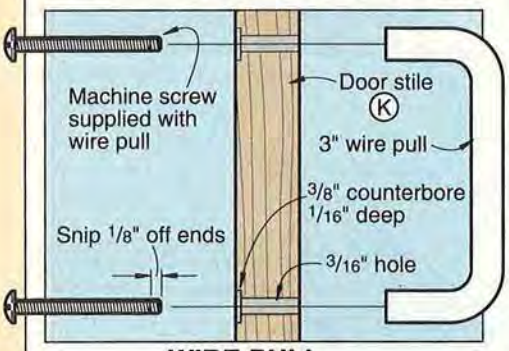
4 Rout a ¼" rabbet ⅜" deep along the back inside edge of the door frame for the acrylic panel and stops. Using a chisel, square the curved corners left by the router.

5 Fit your router with a ⅜" round-over bit, and rout along the front inside edge of the door frame. See the Section View detail accompanying the Door drawing for reference.

Continued

WALL-CABINET SYSTEM

6 Using the Wire Pull drawing for dimensions, drill the mounting holes in the left-hand stile for the pull. (For a flush-closing door, we drilled ⅜" holes 1/16" deep on the back of the door for the screw heads. Then, we used a combination bolt cutter/wire stripper to snip ⅛" off the end of each screw so the wire pull would draw tight to the door front.) See the Buying Guide for our hardware source.



WIRE PULL

7 Drill the pilot holes, and fasten a pair of no-mortise hinges to the right-hand door stile. Center the door top to bottom in the opening, and mark the mating hinge locations on the cabinet side. Drill mounting holes, and attach the hinges and door to the cabinet.

8 Cut the acrylic-panel stops (L, M) to size. Snip the head off a ½" × #18 brad, chuck the headless brad into your portable drill, and drill pilot holes through the stops. Do not install the acrylic yet.

Complete the assembly, add the finish, and hang

1 Insert a pair of magnetic catches into the holes in the left-hand door stop.

2 Fasten the door stops (H, I) to the cabinet so when swung shut, the front of the door is flush with the front of the cabinet.

3 Close the door tightly against the catches to mark their mating position on the back edge of the door stile (K). Next, using a brad-point bit, drill a ½" hole 1/16" in the door stile where indented for each strike plate. Using the centered depression left by the brad-point bit when drilling the ½" hole, drill a 3/32" pilot hole ⅜" deep centered inside the ½"-diameter counterbore. Screw the strike plates in place.

4 Remove the hardware (except for the magnetic catches) from the cabinet and door. Finish-sand the cabinet assembly, back, door, and acrylic panel stops.

How to design and make your own

CUSTOMIZED TOOL HOLDERS

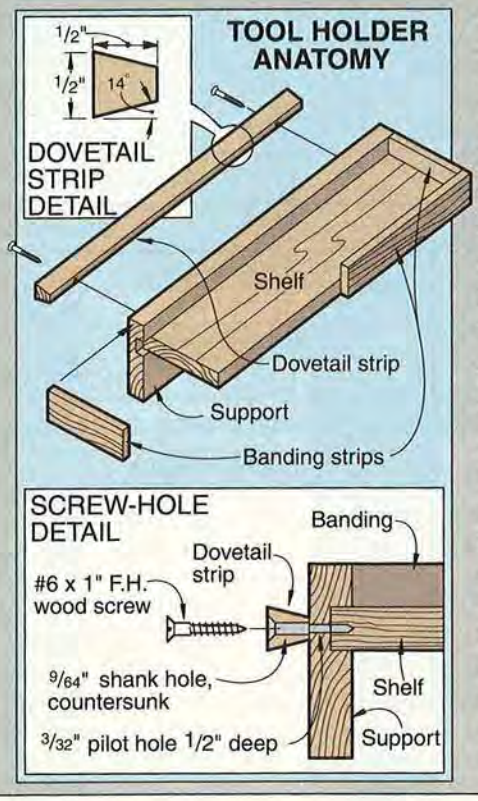
Now that you've built a cabinet or two using our IDEA SHOP wall-cabinet design, it's time to add some customized holders. But before you begin, familiarize yourself with a holder's parts.

Anatomy of a tool holder

As shown at *right*, we call the horizontal part that supports the tool the ***shelf.*** For heavier items, the shelf fits into a groove in the **support**. The ***dovetail strip*** attaches to the back of a shelf or support and slides between the mounting strips. The ***banding strips*** protect tools from falling off the front or ends of the shelf.

Make your holders to fit

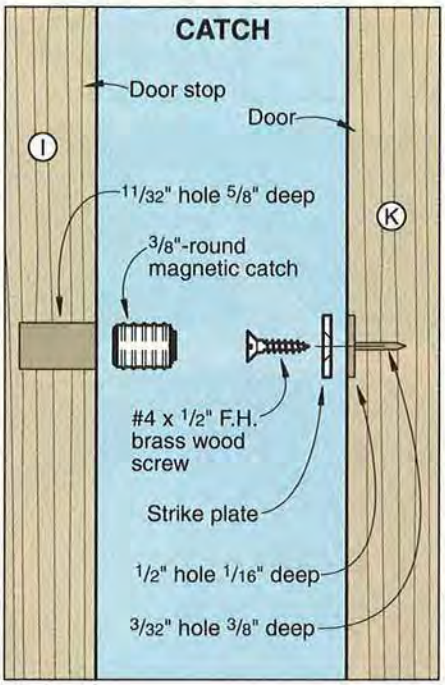
To make the shelf, start by laying the item you want to store on a piece of stock. (We used ½"- and ¾"-thick maple for most shelves.) If the bottom of the tool is square or rectangular, cut the shelf about ⅛" oversize. Or, for screwdrivers, router bits, and other shanked items, cut the shelf to size, and drill holes for the tool shanks where shown on the Screwdriver Holder drawing. The distance between holes depends on the items you intend to store.



Next, add the banding strips

These should extend high enough above the shelf (usually about ¼") to keep the tool from being bumped off. We used banded shelves for planes, sharpening stones, drill bit index boxes, and other flat-bottomed items. If the tool's outline is irregular like that of the caliper holder on the *opposite page*, mark a portion of the tool's outline on ¾" stock. Then, cut the outline to shape.

5 Mask the surrounding areas and catches, and apply a clear finish to the face strips, door stops, mounting strips, and door.
6 Mask the maple face strips (F, G), and then paint the cabinet.
7 Measure the openings, and have an acrylic panel cut to fit. Secure the panel with the stops (L, M).
8 Reattach the wire pull and hinges to the door. Reattach the door to the cabinet.
9 To mount the back (A) to the wall, locate the stud(s), and position the back. Drill mounting holes through the top and bottom of the back, centered over the stud(s). Check for plumb and level, and secure the back to the wall. Fit the cabinet assembly onto the back, and secure it to the back by driving a set of screws through the hanger strip (E) and into the back. After you've built your organizers, remove the cabinet from the back, slide the organizers in place, and reattach the cabinet to the back.



Buying Guide

• **Hardware.** 3" polished-brass wire pull, two magnetic catches with strike plates, and two ¾×2" no-mortise hinges. Kit no. 71159 (enough for one cabinet), $7 ppd. Kit no. 71167, $13 ppd. for two kits, and kit no. 71168, $25 for five kits. Klockit, P.O. Box 636, Lake Geneva, WI 53147. Or, call 800/556-2548 to order.

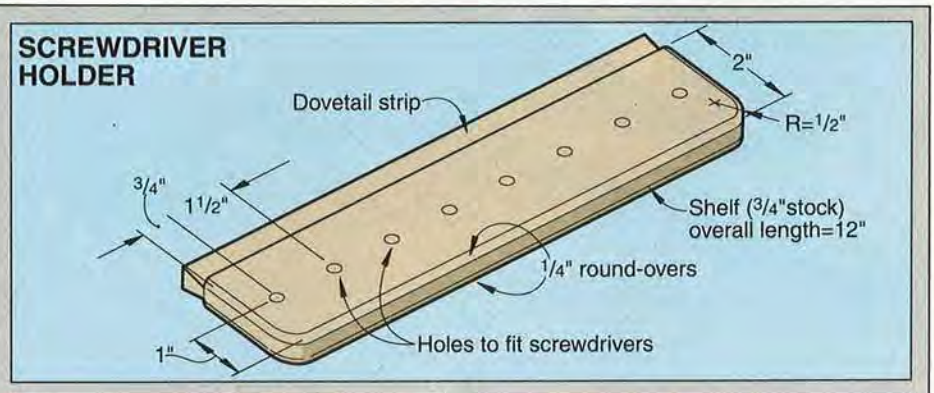
Project Design: James R. Downing; Jim Boelling; Marlen Kemmet
Photographs: Wm. Hopkins; John Hetherington
Illustrations: Kim Downing

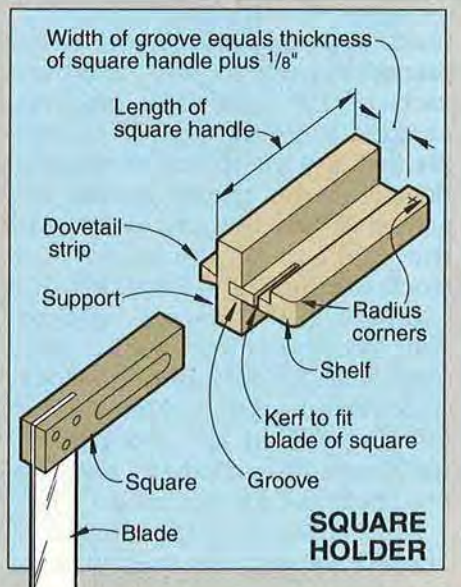
Now, add the dovetail strips

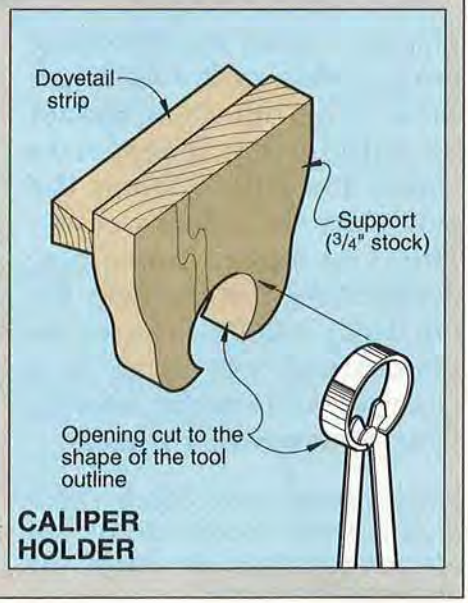
Bevel-rip long lengths of dovetail-strip stock at 14°. See the Dovetail Strip detail accompanying the drawing at *left* for reference. Crosscut the dovetail strips to length. Drill and countersink mounting holes in the back edge of the strip. Glue and screw the dovetail strip to the back edge of the shelf, support, or holder.

Slide the dovetail strip of the holder between the mounting strips in the cabinet back. If the dovetail strip fits too tightly between the mounting strips, sand it slightly for a smooth sliding action. Remove and finish holders.

Once dry, slide your holders between the mounting strips in the cabinet back (attached to the wall at this point). Arrange the holders as needed, secure the cabinet back to the wall. You're ready to add your tools and accessories.







Print this article

WORKSHOP CLOCK

Though a good woodworking project often makes us forget about time, no shop should be without an appropriate clock—for telling when the glue's dry or supper's ready. This tool-topped timepiece, designed by Jim Boelling for the IDEA SHOP, begs to be noticed and will serve as a conversation piece among your woodworking friends.

***You'll need** 1 1/16"-thick (also known as 5/4) stock in cherry, maple, and walnut to build the woodworker's clock.*

From 1 1/16"-thick stock, rip three pieces of cherry to 3 1/16", and trim each to 12" long. Also rip and crosscut a 3 1/2 × 12" piece of maple and a 3 × 8" piece of walnut. Edge-glue the cherry boards together. When the glue dries, cut the panel to 9" square for the clock surround. Sand smooth.

Chuck a 3" Forstner bit into your drill press, and bore a centered hole 7/8" deep into the clock surround's back side. Change to a 3/8" bit to drill the shaft hole. Hand-drill an angled 1/8" hanging hole near the top on back.

Next, make the plane ornament. Transfer the patterns to your walnut, maple, and cherry stock (use the cutoff from the clock surround for the cherry). Cut the pieces with a bandsaw (we used a 1/8" blade) or a scrollsaw, and then sand them to fit together.

Tape a copy of the pattern to a scrap piece of plywood, cover it with waxed paper, and then position the maple plane base on the pattern, pinning it in place with 4d finishing nails. Next, glue on the walnut knob and handle, followed by the maple frog and iron assembly, and the cherry thumb knob. Once dry, sand both sides, rounding over the edges.

Now, glue the plane to the top edge of the surround, offsetting it about 1/16" toward the front. For a

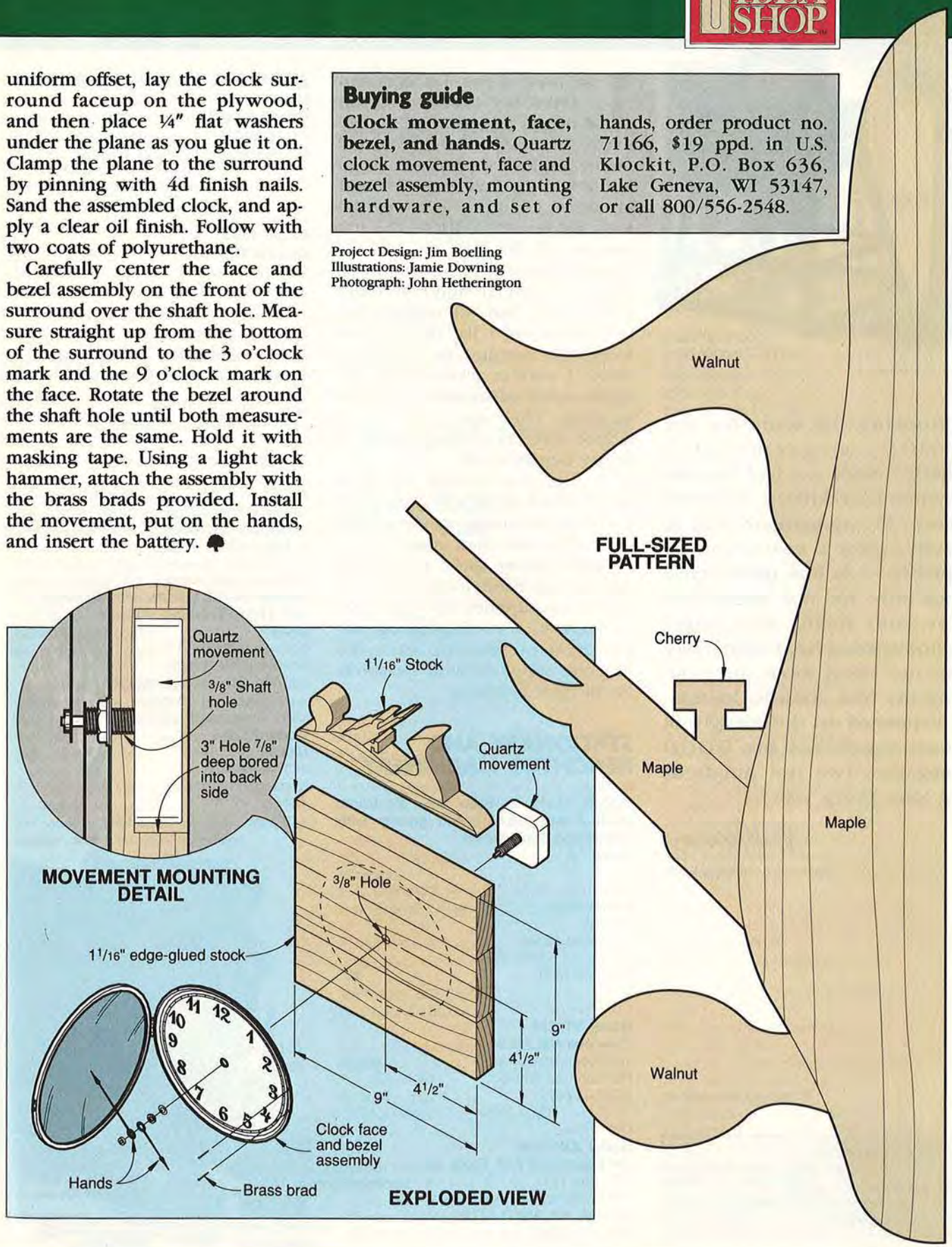
uniform offset, lay the clock surround faceup on the plywood, and then place ¼" flat washers under the plane as you glue it on. Clamp the plane to the surround by pinning with 4d finish nails. Sand the assembled clock, and apply a clear oil finish. Follow with two coats of polyurethane.

Carefully center the face and bezel assembly on the front of the surround over the shaft hole. Measure straight up from the bottom of the surround to the 3 o'clock mark and the 9 o'clock mark on the face. Rotate the bezel around the shaft hole until both measurements are the same. Hold it with masking tape. Using a light tack hammer, attach the assembly with the brass brads provided. Install the movement, put on the hands, and insert the battery.

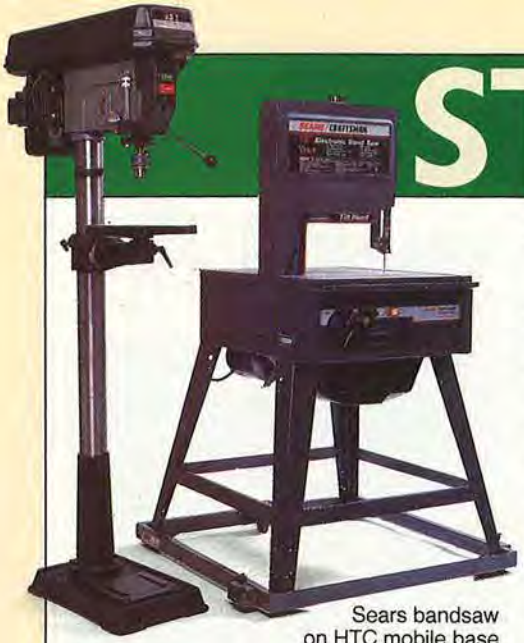
Buying guide

Clock movement, face, bezel, and hands. Quartz clock movement, face and bezel assembly, mounting hardware, and set of hands, order product no. 71166, $19 ppd. in U.S. Klockit, P.O. Box 636, Lake Geneva, WI 53147, or call 800/556-2548.

Project Design: Jim Boelling
Illustrations: Jamie Downing
Photograph: John Hetherington



STOCKED FOR



Sears bandsaw on HTC mobile base

Jet drill press

Choosing the tools for the *WOOD*® magazine IDEA SHOP™ made me feel like the proverbial kid in a candy store. My assignment was to help select a collection of quality tools that made sense not only for our needs, but for your needs as a home woodworker. No, I didn't rely on my sweet tooth for guiding my tool choices. Instead, I depended on the many tool tests conducted for *WOOD* magazine (we test hundreds of tools every year).

Bill Krier

Products/Techniques Editor

Print this article

Guide to symbols
* Visit your local Sears store or call a Sears telecatalog center.
\# These suppliers carry a full line of tools and accessories.

Like most of you, I've accumulated my tool collection over a period of years. Doing it this way, it never dawned on me just how many products go into a well-stocked shop. But, as I sat down to make a list of the tools for the IDEA SHOP, the immensity of the task quickly became apparent. I soon had a listing of several hundred tools, from more than 50 manufacturers! So, before I list the selected tools and supplies in the IDEA SHOP, I want to acknowledge the efforts and contributions of all our suppliers. Their speedy assistance helped make all of this possible. A hearty thanks to all!

To steer you through the tools in the IDEA SHOP, I'll first mention the stationary and benchtop machines, and then move on to portable power tools, power-tool accessories, hand tools, and miscellaneous supplies. For your convenience, I've included information on how to reach the different suppliers with questions about their products.

STATIONARY AND BENCHTOP MACHINERY

Bandsaw and bench grinder:
Models 24844 bandsaw with electronic readout and 19042 bench grinder with sharpening accessories
Sears *#

Benchtop sander (1" belt, 5" disc):
Model 1731
Dremel
4915 21st Street
Racine, WI 53406-9989
414/554-1390

Compressor:
Model VT6196
Campbell Hausfeld
100 Production Drive
Harrison, OH 45030
800/543-8622

Drill press:
Model JDP-17MF
Jet Equipment and Tools, Inc.
P.O. Box 1477
1901 Jefferson Avenue
Tacoma, WA 98401-1477
206/572-5000

Dust collector:
Model G1029
Grizzly Imports
P.O. Box 2069
Bellingham, WA 98227
800/541-5537 (west of Mississippi);
800/523-4777 (east of Mississippi)

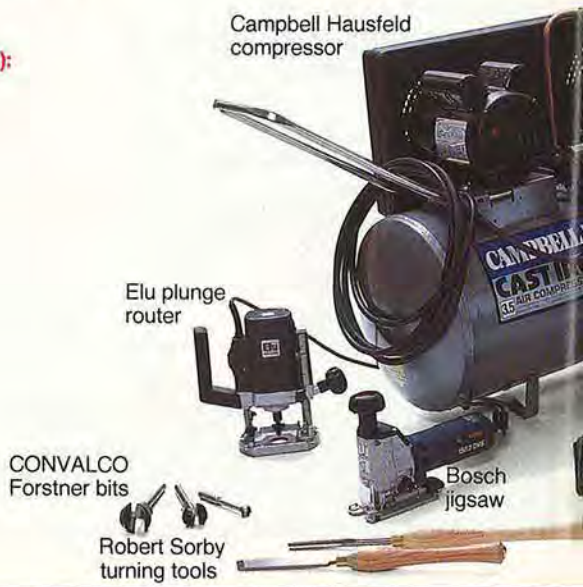
Lathe:
Model 160-2
General Mfg. Co.
835 Cherrier Street
Drummondville, Quebec J2B 5A8
819/472-1161

Scrollsaw:
Hegner model 22V
Advanced Machinery Imports (AMI)
P.O. Box 312
New Castle, DE 19720
800/648-4264 or 302/322-2226

Sliding compound mitersaw:
Model LS1011
Makita
14930 Northam Street
La Mirada, CA 90638
714/522-8088

Tablesaw and sander:
Models 34-782 Unisaw with Unifence and 31-730 finishing machine
Delta
246 Alpha Drive
Pittsburgh, PA 15238
800/438-2486 or 412/963-2400

Thickness planer/jointer:
Model P12RA
Hitachi
4487-E Park Dr.
Norcross, GA 30093
404/925-1774



SUCCESS Our tool picks for the IDEA SHOP

PORTABLE POWER TOOLS

Air-powered tools:
Models TL1016 straight-line sander, NB0030 finish-nail gun, TL1020 mini die grinder, DH5200 spray gun, and AT1211 sandblaster
Campbell-Hausfeld
100 Production Drive
Harrison, OH 45030; 800/543-8622

Circular saw:
Model 5657
Skil
4300 West Peterson Ave.
Chicago, IL 60646; 312/286-7330

Cordless drill:
Model EY6281
Panasonic
1 Panasonic Way 4A-3
Secaucus, NJ 07094; 201/348-5334

Cordless power tools, finishing sander, and heat gun:
9.6-volt cordless models 5090DW circular saw, 6093 drill/driver, 4300D jigsaw, 4390D reciprocating saw, DA390D angle drill, and ML900 flashlight; also, these AC-powered tools: model BO4550 ¼-sheet finishing sander and model HG1100 heat gun
Makita
14930 Northam Street
La Mirada, CA 90638; 714/522-8088

Jigsaw and ⅜" electric drill:
Bosch models 1582DVS (dustless, variable speed) jigsaw and 1026 drill
See your Yellow Pages for the location of your nearest dealer.

Plunge router (medium sized), belt sander, and biscuit joiner:
Elu models 3304 plunge router, 4024 belt sander, and 3380 jointer/spliner

Black & Decker
10 North Park Drive, P.O. Box 798
Hunt Valley, MD 21030
800/762-6672 or 301/527-7000

Random-orbit sander:
Model RS-115
Ryobi
5201 Pearman Dairy Road
Anderson, SC 29625; 800/323-4615

Router (fixed base, medium sized):
Model 690
Porter-Cable
4825 Highway 45 N.
P.O. Box 2468
Jackson, TN 38302-2468; 901/668-8600

Shop vacuum, ½" drill, and small fixed-base router:
Models 17849 shop vacuum, 27143 drill, and 17471 router
***Sears* ***

POWER-TOOL ACCESSORIES

Tablesaw taper jig, zero-clearance throat inserts for tablesaws, sanding belt cleaning block, and titanium-nitride coated countersinks for metalwork:
Trend-Lines #
375 Beacham St.
Chelsea, MA 02150-0999
800/767-9999

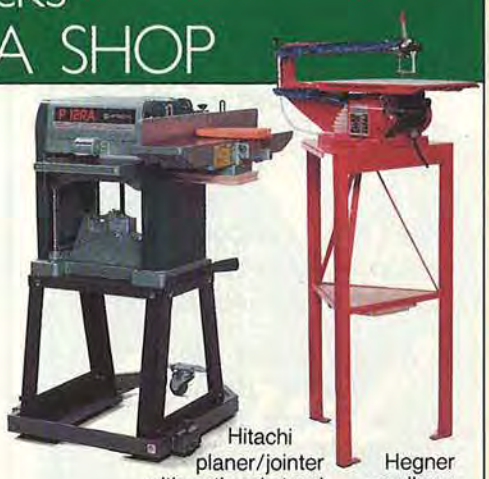
Router bits, saw blades, and dado set:
Freud
P.O. Box 7187
High Point, NC 27264
919/434-8300

Forstner bits from ¼" to 2" in ⅛" increments (bits in 1/16" increments also available), and plug cutters:
Convalco
P.O. Box 1957
New Britain, CT 06050; 203/223-0076

Stickit self-adhesive abrasives, sanding belts, and flap sander:
3M
3M Center, 515-3N-02
St. Paul, MN 55144

Router speed control:
MLCS
P.O. Box 4053
Rydal, PA 19046
800/533-9298 or 215/938-5060

Safety kit (pushblocks, pushsticks, and feather board):
Shopsmith #
3931 Image Drive
Dayton, OH 45414
800/543-7586 or 513/898-6070



Dial-indicator knife gauge:
Woodmaster Tools
2908 Oak St.
Kansas City, MO 64108;
800/821-6651 or 816/756-2195

Magic Mat pad for routers and sanders, and 4½" hook-and-loop abrasive discs:
Quaker State Woodworking Supply #
4434 Kutztown Road
Reading, PA 19560; 800/776-5467

Mobile bases for tablesaw, bandsaw, planer, and lathe:
HTC Products
120 E. Hudson, P.O. Box 839
Royal Oak, MI 48068
800/624-2027 or 313/399-6180

Sanding drums and sleeves, shear-cutting countersinks:
Garrett Wade #
161 Avenue of the Americas
New York, NY 10013-1299; 212/807-1155

Large Forstner bits (2⅛–3"), miter-cutting attachment, anti-kickback device, and brad-point drill bits:
Leitchtung Workshops #
4944 Commerce Parkway
Cleveland, OH 44128-5985; 800/321-6840

Screwmate drills and countersinks, dowel jig, circle cutters, and twist drills:
Stanley Tools #
Readers Response Service
P.O. Box 1146
Bellmore, NY 11710; 203/827-5237

Turning tools, Porter-Cable dovetail jig, Incra-Jig fence system, 1", 2", and 3" sanding discs (flexed and fixed), and bowl-sanding kit:
***Woodcraft* Supply #**
210 Wood County Industrial Park
Parkersburg, WV 26102-1686; 800/225-1153

Compressed-air hose and reel:
Reelcraft Industries
2842 E. Business 30, P.O. Box 248
Columbia City, IN 46725-9987
800/444-3134

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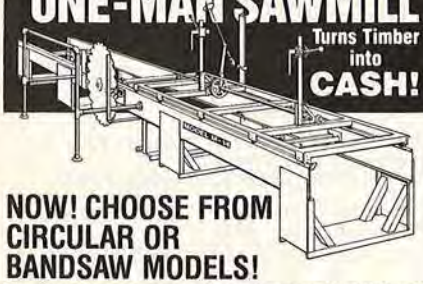

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Green Bay, WI 54307-3186
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Continued from page 83

HAND TOOLS

C-clamps:
Record Tools
1915 Clements Road, No. 1
Pickering, Ont. Canada L1W 3V1
800/267-8367

Calipers, compasses, trammel point set, Japanese-style saws, wooden-handled hammers, and scratch awl:
Garrett Wade #
161 Avenue of the Americas
New York, NY 10013-1299
212/807-1155

Chisels:
Freud
P.O. Box 7187
High Point, NC 27264
919/434-8300

Crescent adjustable wrenches and nippers, Lufkin tape measures, Weller soldering gun, Turner propane torch, Plumb steel hammer, and Nicholson handsaw:
Coopertools
P.O. Box 728
Apex, NC 27502; 919/362-7510

Handscrews, pipe-clamp fixtures, band clamps, spring clamps, and bar clamps:
Adjustable Clamp Co. (Pony, Jorgensen)
417 North Ashland Avenue
Chicago, IL 60622; 312/666-0040

Hotmelt glue gun and stapler: Models R550 and T50
Arrow
271 Mayhill St.
Saddlebrook, NJ 07662; 201/843-6900

Level:
Pro Smartlevel
Wedge Innovations
2040 Fortune Drive, Suite 102
San Jose, CA 95131; 408/434-7000

Planes, combination squares, try squares, Lion miter trimmer, various marking and measuring gauges, various chisels, files, rasps, various calipers, honing guide, and turning tools:
***Woodcraft* Supply #**
210 Wood County Industrial Park
P.O. Box 1686
Parkersburg, WV 26102-1686
800/225-1153

Dead-blow hammer and toggle clamps:
Trend-Lines #
375 Beacham St.
Chelsea, MA 02150-0999
800/767-9999

Diamond sharpening supplies:
Diamond Machining Technology (DMT)
85 Hayes Memorial Drive
Marlborough, MA 01752
800/666-4368

Double bar clamps:
Shopsmith #
3931 Image Drive
Dayton, OH 45414
800/543-7586 or 513/898-6070

Handsaw, tin snips, dovetail saw, hacksaw, scrapers, screwdrivers, nailsets, utility knife, and framing square:
Stanley Tools #
Readers Response Service
P.O. Box 1146
Bellmore, NY 11710
203/827-5237

Sanding blocks, Scotchbrite pads, and sandpaper sheets:
3M
3M Center, 515-3N-02
St. Paul, MN 55144

Tap and die sets, various cold chisels and punches, and power bits:
Vermont American #
P.O. Box 340
Lincolnton, NC 28093-0340
704/735-7464

Vise-Grip C-clamps, Quick-Grip bar clamps, Chesco hex- and torx-key sets:
American Tool Companies
108 South Pear Street
P.O. Box 337
DeWitt, NE 68341; 402/683-2315

Wrenches, socket sets, nutdriver set, pliers set, cordless-drill screwdriving bits:
Sears *#

MISCELLANEOUS SUPPLIES

Acrylic paints, artist paintbrushes, airbrush set, and magnifier lamp:
P.C. English #
P.O. Box 380
6201 Mallard Road
Thornburg, VA 22565
800/221-9474

Carving gouges, mallet, bench knife, inshave, draw knife, woodcarver screws, strop, leather wheel, honing compound, water-wheel sharpener, and other miscellaneous carving supplies:
Woodcraft Supply #
210 Wood County Industrial Park
P.O. Box 1686
Parkersburg, WV 26102-1686
800/225-1153

Chip-carving knives:
Alpine School of Woodcarving
225 Vine Ave.
Park Ridge, IL 60068
708/692-2822

Enamel paints:
Rust-Oleum
11 Hawthorn Parkway
Vernon Hills, IL 60061
708/367-7700

Fire extinguishers:
Ansul Fire Protection
One Stanton St.
Marinette, WI 54143
715/735-7411

Hardware (various items ranging from nuts and bolts to threaded inserts and hinges; write the supplier for a complete listing), vix bits, acid brushes, instant glue, and anti-fatigue floor mats:
The Woodworker's Store #
21801 Industrial Boulevard
Rogers, MN 55374-9514
612/428-2199

Hardware storage bins and cabinets:
Akro-Mils
P.O. Box 989
Akron, OH 44309
216/253-5592

HVLP finish application system:
Wagner Fine Coat
1770 Fernbrook Lane
Plymouth, MN 55447
612/553-7000

Interchangeable carving-tool kit with hardwood handle:
Warren Tool Company
Rt. 1, Box 14A
Dept. PDW
Rhinebeck, NY 12572
914/876-7817

Lubricants for bearings, cutting tools, and work surfaces:
Sandaro Industries
68 Leveroni Court
Novato, CA 94949
800/999-7009

Masking tape, Super 77 spray adhesive, Just Like Wood wood putty, New Strokes disposable paintbrushes, and various disposable respirators:
3M
3M Center, 515-3N-02
St. Paul, MN 55144

Mobile Tool Cabinets:
Stanley Tools #
Readers Response Service
P.O. Box 1146
Bellmore, NY 11710
203/827-5237

Moisture Meter:
Lignomat model Mini E and Hygrometer
14345 N.E. Morris Court, P.O. Box 30145
Portland, OR 97230
503/257-8957

Moto-tool and heavy-duty flex-shaft kits: Models 3952 and 7390
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414/554-1390

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Continued from page 85

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Safety equipment for hazardous materials (storage cabinet for finishing products, oily-waste can, Cease-Fire waste receptacle, and dispensing cans for flammable liquids):
Justrite Manufacturing
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Des Plaines, IL 60016
800/798-9250

Stains, clear polyurethane finish, refinishing supplies, and tung oil:
Formby's
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Building C, Suite 240,
Memphis, TN 38117
800/367-6297

Woodworker's glue (dark, yellow, and white), and wood filler:
Elmer's
Consumer Response Dept.
180 E. Broad St.
Columbus, OH 43215-3799
614/225-4511

Woodworker's vise:
Columbian model 10RD
Warren Tool Group
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Hiram, OH 44234
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28-180 bench bandsaw 169
23-700 wet/dry grinder 159
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40-560 16" 2 sp. scroll saw 184

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D10DFK VSR drill kit 139
C15FB 15" mitre saw 379
C10FA 10" mitre saw 269
C7BD 7-1/4" saw w/case 129
M12V 3-1/4 hp VS pl. router 224
TR12 3 hp plunge router 169

Elu

3338 2-1/4 HP Electronic VS Plunge Router **$259**

3380 jointer/spliner w/case 249

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1581VS Top Handle Jig Saw w/Case & 30 Blades **$184**

1582VS barrel grip jig saw 134
1582VS barrel grip Clic jig s 134
1632VSK VS recip saw kit 140
3051VSRK3/8kyls kit w/2 bat139
3258 3-1/4" power plane 128
1615EVS 3-1/4 vs pl router 259
1615 3 hp plunge router 229
1604 1-3/4 hp router 129
1370DEVSK 6" r. sander kit 269
3283DVS 5" random sander 95
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FT-2000E 3.25 vs pl. router 209
EB-100 edge banding sys. 229

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AP10 10" portable planer 358
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TFD220VRK 12vcdls kit/2bat 169
RE-600 3hp vs pl. router 209
JP-155 6-1/8" jointer/planer 299
RA-200 8-1/4" rad. arm saw 239
TS254 10" m. saw w/c.t. bl 209
RS115 random orb. sander 74

J E T

JBS-14CS 14" Wood Bandsaw **$449**

JDP-17MF17"floor drill press 399
JJ-6CS 6" long bed jointer 449
DC-610 1 HP dust collector 229
DC-1182 dust collector cfm 439
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352VS 3x21 vs belt sndr w/c 164
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9852 12v, 3/8" , 2sp kit 149
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7335 5" VS random sander* 137
7336 6" VS rdm sander* 143
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97310 laminate trimmer kit 188
352 3x21 sander with bag 138
360 3x24 sander with bag 184
362 4x24 sander with bag 189

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THE NEW RYOBI BT3000

Smart engineering in a small tablesaw

I have to admit that when I first saw the Ryobi BT3000 10" Precision Woodcutting System I didn't think it would amount to much. After all, I've tested nearly every benchtop tablesaw on the market, and all of them have shortcomings. Well, this machine thoroughly impressed me. Here's what I found in my testing:

• Assembly and adjustments

The machine comes with an informative videotape and a clearly written 44-page operating manual. I had the machine up and running in less than an hour. The fence and sliding table were accurately adjusted at the factory.

• Versatility

Here is where this machine really shines. It has three tables: the main, fixed table directly above the blade, a sliding miter table that normally mounts to the left of the main table, and an accessory table to the operators' right that holds a router or jigsaw.

The smooth-operating sliding table helps you make controlled, precise, and safe crosscuts, even on large pieces of stock. With the table pulled completely forward, you can crosscut workpieces up to 16" wide. The table has large degree-of-miter scales cast into it for accurate angled cuts.

By pulling up on levers at the back and front of the table (see photo *below*), you can quickly lift off and move the sliding table to the other side of the machine and use it in conjunction with a router mounted in the accessory table.

• The fence

Here's an area where most benchtop saws fail miserably. The BT3000 didn't. Its extruded-aluminum fence locks securely to the front and rear rails for rock-steady rip cuts. The front rail has a built-in scale, so you can make precise rip cuts time after time without using a tape measure. The machine has 24" of ripping capacity to the right of the blade, and 10" to the left. You can reverse these capacities by simply releasing thumb locks and sliding the rails fully to the left. The rails even have a second set of scales for this application.

• Power train

My examination of this tool's underside revealed that its beauty goes more than just skin deep. The 13-amp.-rated universal motor is mounted on a sturdy, cast-aluminum support mechanism. The motor's power steadily transfers to a bearing-mounted drive shaft via two flat timing belts. The machine was surprisingly quiet considering its universal motor.

The saw's standard-equipment, carbide-tipped blade (made by Freud), raises 3⅝" above the table surface, so you can cut a 4×4 in a single pass. In my tests, the saw easily ripped a 2×4 on edge, even at a fast feed rate.

• Dust collection

Most tablesaws make effective dust collection nearly impossible, but the BT3000 has this problem under control. A shroud surrounds the underside of the blade and channels the dust into a port that tilts as the blade tilts (see photo *above*). Without a vacuum, the machine spews debris into a neat pile behind the saw, but sends fine dust into the air. With a vacuum, almost no dust escapes.

I advise against purchasing the optional dust bag. In my tests, the bag quickly clogs with dust at its inlet. When I asked Wayne Hill of Ryobi about this problem, he told me that his company plans to correct this shortcoming by offering accessory plastic zero-clearance inserts for the blade opening. These inserts form a tight opening around the blade, so none of the air movement generated by the machine's motor is lost through the blade slot.

• Accessories

To make this machine even more versatile, you can buy plenty of optional accessories including a metal stand, miter-clamping kit, dado throat plate, router and jigsaw mounting kit, wide-table kit, and long miter/rip fence kit. I tried all of these accessories, and they all worked fine. Wayne Hill told me that Ryobi plans to also introduce a mortise-and-tenon kit and router-table plates for holding routers other than Ryobi's RE600.

I could go on and on about this machine's virtues, but you really have to get down to a Ryobi dealer to try one out for yourself. It's definitely worth a test drive.

• My only reservation

Initially, I was concerned about the machine's many plastic parts at the wear points of adjustable components. For example, the slide blocks and adjusters on the sliding table, and the locking tabs on the rip fence, are all plastic.

Wayne Hill responded to my concerns by saying that none of these parts wore out in Ryobi's own 100-hour test. And, the cost of replacing these parts won't hurt your billfold much. For example, the sliding table requires four sets of miter-table slides costing 52¢ each ($2.08 for all four sets).

—Tested by George Granseth

Ryobi BT3000 10" Precision Woodcutting System, under $600 at Ryobi dealers. For more information, call Ryobi at 800/323-4615 or 803/226-6511.

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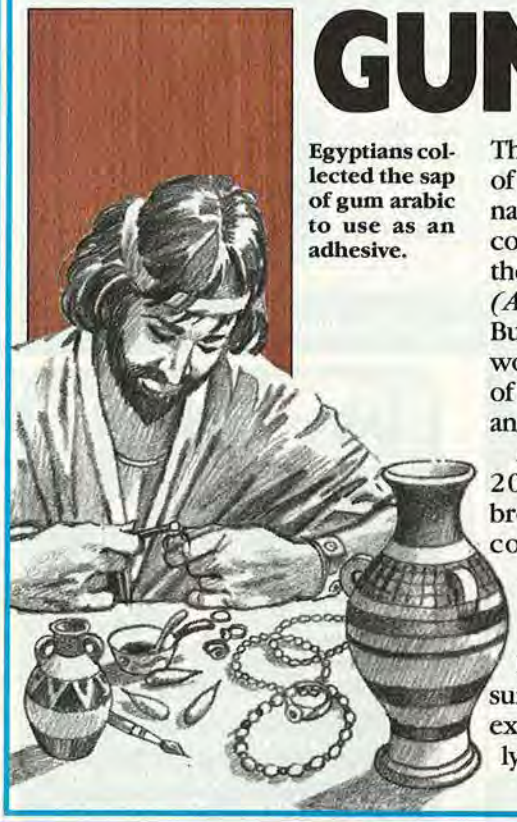

Egyptians collected the sap of gum arabic to use as an adhesive.

The catclaw tree *(Acacia greggii)* of the American Southwest gets its name from the talon-like thorns covering its branches. Likewise, the catclaw's cousin, gum arabic *(Acacia senegal),* has sharp thorns. But, it's the sap, not the thorns or wood, that's made the reputation of this native of northwest Africa and the Middle East.

A short tree, growing to only 20′, gum arabic has reddish brown wood that local craftsmen convert into novelties such as turnings and jewelry. Its water-soluble sap, though, eventually travels the world.

During droughts, the deeply fissured gray bark of the tree splits, exuding a resinous sap that slowly forms into 2″-long tears. Ancient Egyptians collected these tears and used the gum as an adhesive to hold gems and glass in jewelry and pottery, and as a paint base. To Arab healers, however, the sap cured coughs and sore throats.

Known today as gum arabic, it plays many commercial roles. In the pharmaceutical industry, for example, it binds the ingredients in pills and tablets. Bakers add gum arabic to their batter to build body and gain texture. It's also used in polishes, watercolors, and other paints. Yet, it's as the mild (and slightly unpleasant tasting) adhesive on the backs of stamps and envelope flaps that most people contact gum arabic. With a lick and a promise, it seals a letter and tickets it for travel.

Illustration: Jim Stevenson

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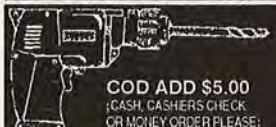

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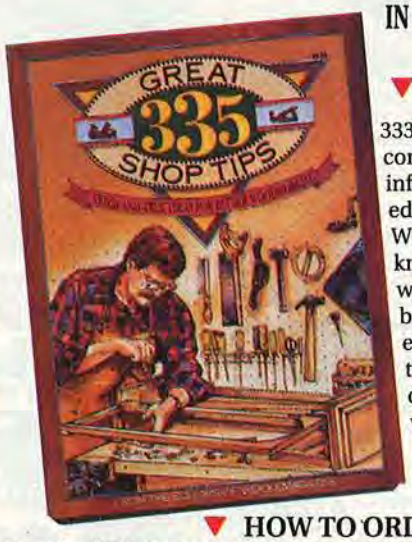

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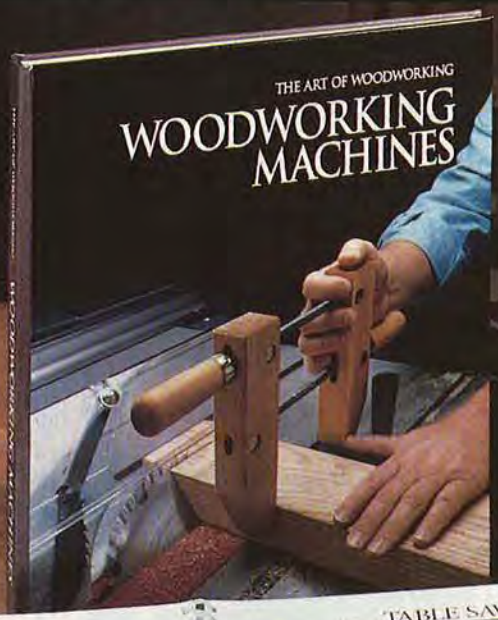

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FROM OUR BOOKSHELF

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THE BOOK OF SHAKER FURNITURE

By John Kassay
University of Massachusetts Press
Amherst, Massachusetts
©1980, 288 pages, $60 hardcover

If Shaker furniture is your favorite, this comprehensive book may be the perfect addition to your woodworking library.

As you might expect, the book opens with a fascinating introduction to the Shaker culture, which took root in the middle 1700s. According to author John Kassay, the religiously devout artisans of Shaker furniture rejected unnecessary ornamentation and applied only the essentials of pure function and form into each design. This same thinking influenced their dress, architecture, and general way of living. In fact, they saw the act of building an unadorned piece of furniture from God's materials and for community-member use as a form of worship.

You'll find chapters chock-full of furniture examples (some 254 black and white photographs throughout), accompanied by descriptions of the historical significance and use, and the original construction details of each piece. Such pieces include benches, beds, cradles, shelves, and tables.

"To make a piece of furniture was an act of worship, the fulfillment of a religious obligation. It expressed the Believer's understanding of the Creator of the materials and the personal goal of oneness with Him, while its purpose was to be communal."

Along with the photos and write-ups are dimensioned plan drawings—front and side views, and some three-dimensional views—supported by a bill of materials for construction. Only the how-to instructions are lacking.

For those interested in the faithful reproduction of Shaker furniture or those who maintain an active curiosity about this group of self-reliant Americans, *The Book Of Shaker Furniture* seems well worth the investment.

Order the book through a bookstore, check your local library, or purchase it for $65 ppd. from Woodworkers Source, 5402 South 40th Street, Phoenix, AZ 85040 or call 602/437-4277 to order.

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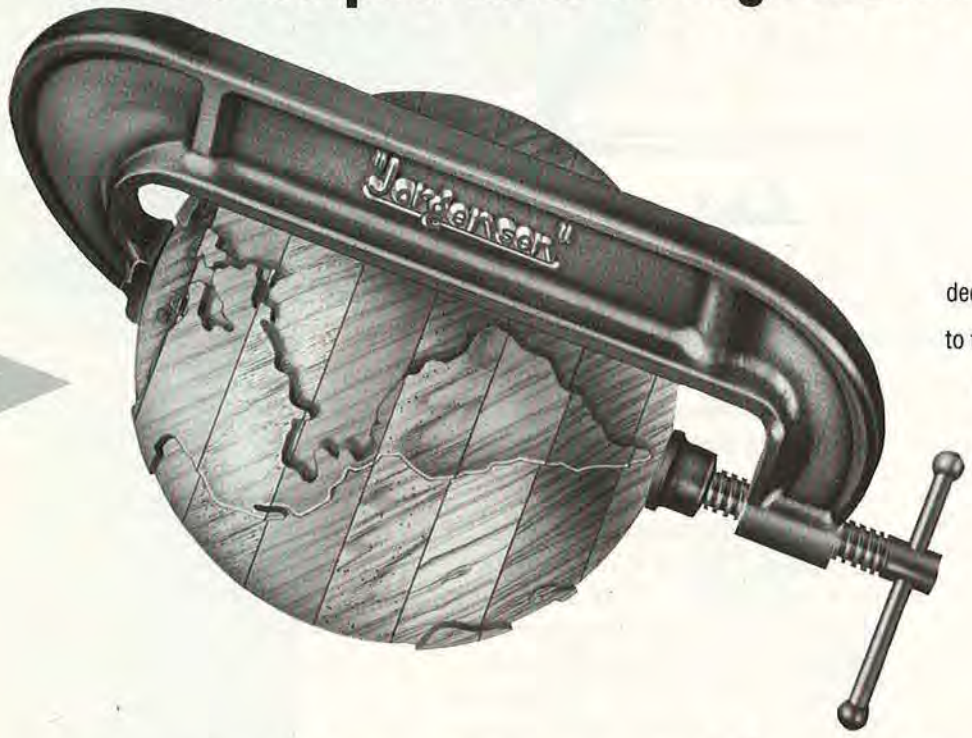

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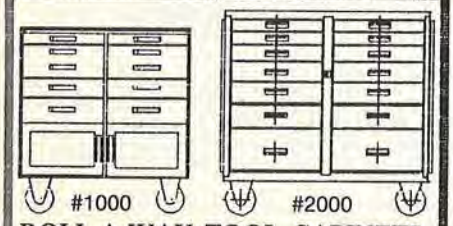

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FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B. 10"	40	67	37
LU82M010	Cut-off 10"	60	90	49
LU84M011	Comb 10"	50	76	38
LU85M010	Super Cut-off 10"	80	112	54
LM72M010	Ripping 10"	24	66	35
LU73M010	Cut off 10"	60	82	44
LU87M010	Thin Kerf 10"	24	70	37
LU88M010	Thin Kerf 10"	60	86	42
LU98M010	Ultimate 10"	80	125	67
TK206	10" Framing	24	38	25
TK303	7-1/4" Finishing	40	37	22
TK306	10" Finishing	40	46	25
TK906	10" Combo	50	52	29
SD306	6" Dado - Carbide		215	109
SD308	8" Dado - Carbide		229	119
F0	1-3/4" x 5/8" Biscuit 1000 Qty		32	29
F10	2-1/8" x 3/4" Biscuit 1000 Qty		32	29
F20	2-3/4" x 1" Biscuit 1000 Qty		34	29
FA	Assorted Biscuits 1000 Qty		34	29
FB100	16 piece Forstner Bit Set		331	165
94-100	5 pc. Router Bit Door System		319	165
JS100	Biscuit Jointer with case		334	159
FT2000E	3-1/4 HP v/spd Plunge Router		410	204

MAKITA TOOLS

Model		List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	124	74
6071DWK	above Drill w/removable batt	194	109
5090DW	3-3/8" Saw Kit 9.6 volt	250	138
6010DWK	3/8" cordless Drill Kit 7.2V	173	97
6010SDW	3/8" cordless Drill Kit 7.2V	96	59
DA3000DW	3/8" Angle Drill 7.2 volt	241	136
4390DW	9.6 cordless Recip Saw Kit	234	129
6012HDW	2 speed Drill w/clutch-comp	236	125
6092DW	var. speed Drill Kit complete	257	127
6093DW	v/spd Drill w/clutch-complete	261	135
6093DWL	6093DW Drill Kit w/Flash Lt	299	169
6095DWE	6095DW Drill Kit w/2 batteries	270	139
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
5007NBA	7-1/4" Saw w/electric brake	243	127
5008NBA	8-1/4" Saw w/electric brake	301	163
B04510	1/4 sheet Pad Sander	93	54
9900B	3" x 21" Belt Sander w/bag	283	144
9924DB	3" x 24" Belt Sander w/bag	299	159
9045N	1/2 sheet Fin. Sander w/bag	246	129
4301BV	Orb. var. spd Jig Saw 3.5A	262	142
JR3000V	var. speed Recip Saw w/cse	239	129
LS1020	10" Mitre Saw 3.5 amp	571	299
9820-2	Blade Sharpener	394	194
1900BW	3-3/4" Planer with case	221	116
1911B	4-3/8" Planer 7.5 amp	255	139
1100	3-1/4" Planer with case	434	229
9207SPC	7" Sander/Polisher	294	154
3601B	1-3/8 HP Router	261	139
B04550	1/4 sheet Pad Sander w/bag	91	56
DA3000R	3/8" Angle Drill	285	152
HP2010N	3/4" var. spd Hmr Drill w/case	304	167
2708W	8-1/4" Table Saw	519	269
2711	10" Table Saw with brake	868	485
1805B	6-1/8" Planer Kit with case	731	369
5005BA	5-1/2" Circular Saw	238	135
6404	3/8" Drill Rev. 0-2100 rpm	2 A105	57
6510LVR	3/8" Drill Rev. 0-1050 rpm	152	83
6820V	0-4000 rpm Drywall Gun 5.2 A	160	90
6013BR	1/2" Drill Rev. 6 amp	263	139
5402A	16" Circular Saw 12 amp	675	345
3612BR	3 HP Plunge Router	347	164
9401	4" x 24" Belt Sander w/bag	343	174
4302C	var. speed Orbital Jig Saw	283	159
5077B	7-1/4" Hypoid Saw	260	138
LS1440	14" Mitre Saw	759	429
LS1030	NEW 10" Mitre Saw	428	225
5007NB	7-1/4" Circular Saw 13 amp	214	114
3612B	3 HP Plunge Router sq/base	347	165
2012	12" Portable Planer	913	468
LS1011	10" Slide Compound Saw	859	439

SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2"	377	275
SFN2	Finish. Nailer 1-1/2" - 2-1/2"	571	395
SN325	Nailer 1-7/8" - 3-1/4"	665	455
SN4	General purpose 2" - 3-1/2"	685	468
LS2	Pinner 5/8" - 1"	351	255
SKS	Stapler 5/8" - 1-1/2"	351	255
LS5	Pinner 1" - 1-1/2"	399	285

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	359
N80C-1	Utility Coil Nailer	845	409
N12B-1	Coil Roofing Nailer	845	418
N60FN-2	Finishing Nailer	625	355
T31	Brad Nailer	270	162
CWC100	1 HP Pancake Compressor	445	295

SKIL SIZZLERS

3810	10" Mitre Saw	263	205
3810K	3810 w/60 tooth Carbide Blade		229
77	7-1/4" Worm Drive Saw	230	144
5825	6-1/2" Worm Drive Saw	255	159
2735-04	12 volt cordless Drill Kit	210	134
2735-04X	2735-04 with keyless chuck	235	137
1605-02	NEW Biscuit Jointer w/case	200	119
7584	NEW 5" Rndm Orbit Sander	160	104

PANASONIC CORDLESS

EY6205BC	NEW variable speed 12 volt Drill w/15 minute charger & case	390	178
EY6200B	NEW 2 speed 12 volt Drill D-handle with 15 minute charger	350	178
EY6281BC	NEW variable speed 9.6 volt Drill w/15 minute charger & case	350	159
EY571B	var. speed 9.6 volt Drill Kit	239	128
EY571BC	EY571B with case & 2 batt	275	158
EY6207BC	NEW 12 volt 1/2" Drill w/keyless chuck var. speed w/15 minute charger & case	421	218

PASLODE IMPULSE GUNS

IM250	Trimpulse Finish Nailer Kit	849	615
IM325	Impulse Framing Nailer Kit	849	615
402500	Extra Battery	Sale	42.95
402502	No-Mar Work contact element	Sale	19.25

HITACHI TOOLS

C7SB	7-1/4" Circular Saw	214	109
DTC10	3/8" 7.2 volt cordless Drill	138	78
C7BD	7-1/4" Circular Saw with brake	230	127
M12V	NEW 3 HP var. speed Router	447	225
TR12	Plunge Router 3 HP	354	169
F1000A	12" Planer/6" Jointer	2835	1519
C10FA	10" Deluxe Mitre Saw	538	274
C12FA	NEW 12" Mitre Saw	632	305
C8FB	8-1/2" Slide Compound Saw	899	445
FREUD LU91M008	8-1/2" Carb bld 48 t	.68	43
C15FB	15" Mitre Saw	745	379
FREUD LU85M015	15"c/bld 108 tooth	180	105

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PIRANHA By B & D CARBIDE TOOTH BLADE

Model #	Dia.	Teeth	List	Sale
73-716	6-1/2	18	13.70	7.55
73-717	7-1/4	18	13.90	7.99
73-737	7-1/4	24	17.20	9.29
73-757	7-1/4	40	31.30	16.89
73-759	8-1/4	40	44.65	24.99
73-719	8-1/4	22	19.65	11.95
73-715	5-1/2	16	13.70	7.99
73-740	10	32	32.98	17.95
73-770	10	60	67.02	33.95

PORTA NAILER

401	Porta Nailer complete	265	189
501	Face Nailer complete	265	189

We stock genuine Porta nails !

WERNER LADDERS

6204	4' Fiberglass	179	65
6205	5' Fiberglass	199	75
6206	6' Fiberglass	215	80

SUMMER KIT SPECIALS

6093DWH	Makita cdls var. spd Drill Kit w/clutch & brake. Includes extra battery & holster	313	167
9852K	Porter Cable 9852 Drill Kit w/extra batt	185	
9853K	Porter Cable 9853 Drill Kit w/extra batt	185	
7334K	Porter Cable 5" Random Orbit Sander with case & 1 roll 100X & 150X discs	253	152
7335K	Porter Cable 5" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs	273	162
7336K	Porter Cable 6" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs	278	169
555K	Porter Cable Plate Biscuit Jointer with case & 1000 assorted biscuits	339	192
JS100K	Freud Jointer w/cs & 1000 biscuits	351	186
1581VSK	Bosch Top Handle Jig Saw with case & 30 Bosch blades	305	182
1582VSK	Bosch CLIC Barrell Grip Jig Saw with case & 30 Bosch blades	305	182

BIESMEYER FENCES

B-50	50" Commer. Saw Fence	329	295
T-SQUARE 52	52" Homeshop Fence	249	235
T-SQUARE 40	40" Homeshop Fence	242	209

WEDGE SMART LEVEL

SM-PR2	2 FT Level with sensor	120	88
SM-PR4	4 FT Level with sensor	150	105
SM-PR6	78" Level with sensor	180	139
SERIES200	NEW 2FT Level with sensor		54.95

Msx636 FEIN	Electric Oscillating Triangle Sander Kit	Sale	279
LPN672 PONY	Air Palm Nailer w/glove	Sale	94.99

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#0	8"	4-1/2"	19.00	11.89	61.00
#1	10"	6"	21.76	12.89	70.65
#2	12"	8-1/2"	24.95	14.95	80.95
#3	14"	10"	31.61	18.95	104.95
#4	16"	12"	42.30	24.95	143.95

JORGENSEN STYLE 37 2-1/2"Throat 1/4"x3/4"

Item#	Jaw Length	List	Sale	Box of 6
3706	6"	9.86	6.25	34.75
3712	12"	10.92	6.75	37.75
3718	18"	12.05	7.25	40.75
3724	24"	13.16	8.19	43.75
3730	30"	14.70	9.10	49.75
3736	36"	16.05	10.19	55.75

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	13.61	7.89	84.99
52	1/2" Black Pipe Clamps	11.37	6.50	69.50

BOSCH

1581VS	Top Handle Jig Saw	265	131
1582VSC	NEW CLIC Barrell Jig Saw	265	131
Bosch	Metal Case for above Jig Saws	34	32
Bosch	30 blade assortment for Jig Saws		26.99
1942	Heat Gun 600° - 900°	111	69
1272D	3" x 24" Belt Sander with bag	329	178
1273D	4" x 24" Belt Sander with bag	345	187
11-212VSR	Bulldog 3/4"SDS Rtry Drill	370	199
1194VSR	1/2" var. speed Hammer Drill	264	145
1194VSRK	Above Hammer Drill w/case	292	179
1608	5.6 amp Laminate Trimmer	149	84
1609K	Lam Installers Kit with 1609	309	175
1609KX	Deluxe Installers kit	361	198
1601	1 HP Router	184	110
1602	1-1/2 HP Router	215	132
1603	1/2 HP D-handle Router	252	143
1604	1-3/4 HP 2 Handle Router	236	128
1604K	same as above w/case & acc	287	165
1606	1-3/4 HP D-handle Router	273	155
3258	3-1/4" Planer w/blade guard	239	137
3258K	3258 Planer with steel case	265	152
3270D	3" x 21" Belt Sander with bag	260	142
1273DVS	var. spd 4" x 24" Belt Sander	370	188
1614	NEW 1HP Plunge Router	220	128
1614EVS	NEW 1-1/4HP v/spd Plge Rtr	255	149
1613	NEW 1-3/4 HP Plunge Router	286	164
1613EVS	NEW 2HP v/sp Plunge Router	320	184
1615	NEW 3 HP, Plunge Router	395	228
1615EVS	NEW 3 HP v/spd Plge Router	460	255
1632VSRK	Recip Saw 8.4A orb-v/spd	225	145
3050VSRK	9.6V cdls v/sp Drill Kit comp	256	135
3051VSRK	3050VSRK w/keyless chuck	266	145
1370DEVS	6" Random Orbit Sander	481	249
3283DVS	5" Random Orbit Sander	159	98
3283DVSK	3283DVS Kit complete	220	129

ELU BY BLACK & DECKER

Model		List	Sale
3338	2-1/4 HP v/spd Plunge Router	427	249
3304	1 HP var. spd Plunge Router	292	164
3375	3-1/8" Univ. planer 7.2 amp	313	155
3380	Biscuit jointer with case	542	248
4024	3 x 21 var. speed Belt Sander	322	184

BLACK & DECKER

1166	3/8" Drill 0-2500 rpm 4 amp	100	65
2600	3/8" Drill 0-1200 rpm 4.5 amp	142	89
1703	10" Mitre Saw w/73-770 blde	313	179
4011	1/4 sheet Palm Sander	82	59
79-034	Workmate 400	175	105
2694	7-1/4" Super Saw cat w/case	248	137
2695	8-1/4" Super Saw cat w/case	271	153

DAVID WHITE

LP6-20	Sight Level package - 20x	310	198
L6-20	Meridian Level - 20x	290	189
LT8-300	Level Transit - 26x	650	445
LT8-300P	above Level w/optical plum	769	525
LT6-900	Level Transit - 20x	389	245
ALT6-900	Automatic Level - Transit - 18x	549	385
ALTP6-900	above Level w/tripod & rod	600	435
AL6-18	Automatic Level - 18x	439	319
ALP6-18HD	above Level w/tripod and rod	550	372

RYOBI SPECIALS

JP-155	6-1/8" Jointer/Planer	611	295
R500	2-1/4" HP Plunge Router	331	155
TS-254	NEW 10" Mitre Saw	397	198
TS-254K	above Saw with acc. kit & B&D 73-770 carbide blade	495	245
AP10	10" Surface Planer 13 amp	820	355
RA200	8-1/4" Radial Arm Saw	520	244
RE600	3 HP Plunge Router	431	204
BE321	3" x 21" var. spd Belt Sander	272	129
SC160	NEW 16" Bench Scroll Saw	261	139
TFD220VRK	12V cordless Drill Kit	325	165
JM100K	NEW Biscuit Jointer w/case	431	204
RS115	NEW4-1/2"v/sp Rdm Orb Sndr	134	74
BT3000	NEW 10" Table Saw	699	539
W660	BEST BUY 7-1/4"Circ Saw 13A	179	88
TSS220	NEW 8-1/2" Slide Comp. Saw	790	449
TS260	NEW 10" Compound Mitre Saw	454	239

LAMELLO BISCUIT JOINTERS

TOP 10	"Simply the Best"	699	559
STANDARD 10	"Professionals Choice"	499	399
COBRA	NEW Biscuit Joiner	Special	299

PORTER CABLE

690	1-1/2 HP Router 8 amp	240	128
691	1-1/2 HP Router D-handle	260	141
695	1-1/2 HP Router/Shaper	335	204
696	HD Shaper Table	185	123
351	3" x 21" Belt Sander w/o bag	245	140
352	3" x 21" Belt Sander with bag	255	142
360	3" x 24" Belt Sander with bag	330	178
361	3" x 24" Belt Sander w/o bag	310	174
362	4" x 24" Belt Sander with bag	345	188
363	4" x 24" Belt Sander w/o bag	330	184
315-1	7-1/4" Top Hdle Circular Saw	210	118
9315-1	315-1 comp. w/cs & carb bld	240	137
617	7-1/4" Pushhandle Saw	210	119
9617	617 comp. w/cse & carb blde.	240	137
314	4-1/2" Trim Saw	240	138
97750	1/2" v/spd Hammer Drill w/cse	260	155
9548	X HD Bayonet Saw with case	320	202
9629	Recip Saw var. speed 8 amp	250	144
666	3/8" HD v/spd Drill 0-1200 rpm	200	125
621	3/8" HD v/spd Drill 0-1000 rpm	170	104
320	Abrasive Plane 3 amp	190	125
9118	Porta Plane Kit 7 amp	360	204
7545	0-2500 Drywall Gun 5.2 amp	185	114
505	1/2 sheet Pad Sander	210	114
7511	3/8" var. speed Drill 5.2 amp	200	113
7514	1/2" var. speed Drill 0-750 rpm	210	118
7515	7514 with keyless chuck	215	124
7549	Top handle Jig Saw 4.8 amp	250	149
330	Speed Block Sander 1/4 sheet	103	58
555	Plate Biscuit Jointer with case	315	165
345	6" Saw Boss 9 amp	180	102
9345	345 comp. w/cse & carb blde	210	124
100	7/8 HP Router	175	105
5116	Omni-Jig	400	255
9647	TIGER CUB Recip. Saw	195	115
9637	Full var/spd Recip Saw 8 amp	250	138
7519	3-1/4 HP Router 2 Handle	410	224
7518	3-1/4 HP 5 speed Router	475	259
7536	2-1/2 HP 2 Handle Router	355	199
7537	2-1/2 HP D-handle Router	375	209
7538	3-1/4 HP Plunge Router	410	224
7399	5.6 amp Drywall Cutout Unit	140	85
7310	5.6 amp Laminate Trimmer	150	88
7312	5.6 amp Offset Base Lam Trim	215	124
7319	5.6A Tilt Base Lam Trimmer	170	100
97310	Laminate Trimmer Kit comp	345	192
7334	5" Random Orbit Sander	210	119
7335	5" var. spd Rndm Orbit Sndr	230	129
7336	6" var. spd Rndm Orbit Sndr	235	134
73333	NEW Dust Collection system		24.50
693	1-1/2 HP Plunge Router Base	295	165
6931	Plunge Router Base	120	75
7539	3-1/4HP var/spd Plunge Router	475	262
9852	12V 3/8"Drill w/cse 0-1000rpm	270	149
9853	9852 with keyless chuck	270	149
9854	12V 1/2" Drill w/cse 0-360 rpm	280	159
8500	12V battery for above drills	Sale	39

New Tools by Porter Cable

332	Palm Grip Rndm Orbit Sander	109	64
333	above Sander with dust bag	125	74
352VS	3x21 Belt Sander w/bag v/spd	280	164
7116	24" Omni Jig	470	268

Print this article

TRUE COLORS

Chlorophyll's green pigments give leaves their spring and summer color. But during the fall, fair-weather green takes a backseat to brighter hues.

When shorter days make the sun's rays dwindle, causing chlorophyll levels in the leaves to drop, two other groups of pigments take over. According to the Arbor Day Foundation, *cartenoids* bring on the marvelous yellow, orange, and brown colors. *Anthocyanins* produce the reds and purples.

WANTED: WOODWORKERS

"Secondary wood processing in the U.S. is a $28 billion industry, and architectural woodworking is part of that," says Greg Heuer, national director of member services for the Architectural Woodwork Institute (AWI). Loosely defined, architectural woodworking means working with wood that's destined to become part of a building—interior and exterior molding and trim, doors and windows, cabinets, etc.

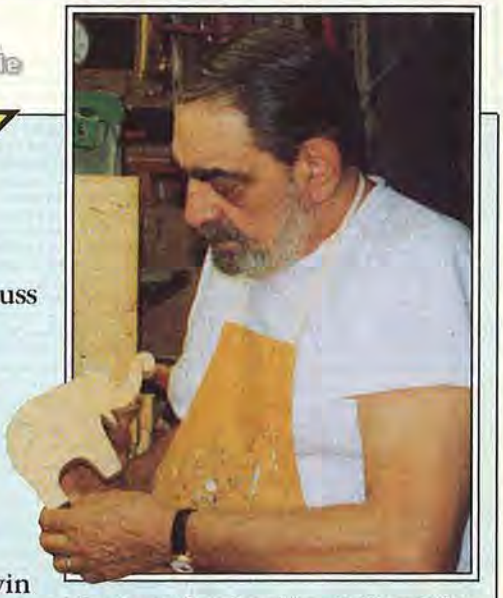
"We're always looking for highly qualified woodworkers," Greg adds. To that end, AWI has set up a clearinghouse for experienced woodworkers seeking jobs.

According to Greg, woodworkers who feel qualified must submit an updated resume that includes experience, education (even seminars count), and areas of interest (millwork, cabinetmaking, installation, etc.). There's also a need for project managers, cost estimators, and mechanical draftpersons. If interested, send a current resume and an introductory letter to: *Career Network, Architectural Woodwork Institute, P.O. Box 1550*, Dept. WD, *Centerville, VA 22020-8550.*

Illustrations: Brian Jensen

FRONT & CENTER
WOODWORKERS WHO MAKE A DIFFERENCE

Name: Marvin Krauss
Age: 63
Home: Brooklyn, N.Y.
Occupation: Retired school custodial foreman
***WOOD*® connection:** Subscriber since 1989



Home woodworker Marvin Krauss has donated his handcrafted toys to needy, and often chronically ill, children throughout the borough of Brooklyn. His wife, Barbara, submitted his name to this column.

In years gone by, when Marvin Krauss wasn't making Brooklyn's George Westinghouse Vocational and Technical High School a better place for students, he was in his home shop crafting toys for disadvantaged kids in the city. In fact, during the last few years Marvin has spread his love—through toys—all across Brooklyn. In appreciation, organizations have singled him out for his thoughtful, kind, and caring ways.

The Caritas Award, presented to Marvin in 1989 by the Catholic Teachers Association, diocese of Brooklyn, perhaps sums up everyone's feelings about him. It states: "To Marvin Krauss, whose munificence in sharing his heart, his life, and his talents gladdens the lives of children with his toys of love."

The benefiters of Marvin's handcrafted handouts often refer to him as "Mr. Geppetto, the toymaker." Barbara, his wife of 39 years and the person who submitted his name to this issue's FRONT & CENTER, couldn't agree more.

"Over the last six years, Marvin has made and donated thousands of toys to the deprived, orphaned, and handicapped," she says. Marvin feels flattered with the awards he's received, but that's not what counts. "Many of my toys go to chronically ill children who can't even handle them. But the toys still thrill them, and that makes me feel wonderful," he says.

Do you know a subscriber who makes a difference? Send details to: Front and Center, WOOD magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

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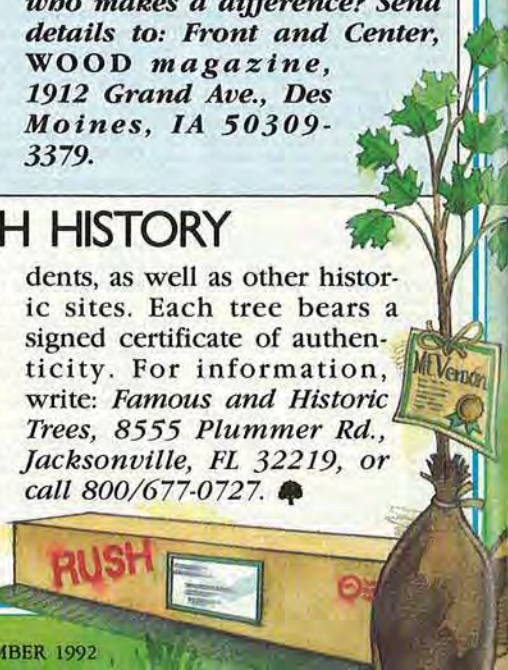
For about $35, you can get a sapling that sprouted from the seeds of a tree growing at George Washington's Mt. Vernon or Abraham Lincoln's home at New Salem, Illinois. A program of the American Forestry Association, Famous and Historic Trees represents a collection of seeds from the homes or birthplaces of American presidents, as well as other historic sites. Each tree bears a signed certificate of authenticity. For information, write: *Famous and Historic Trees, 8555 Plummer Rd., Jacksonville, FL 32219, or call 800/677-0727.*



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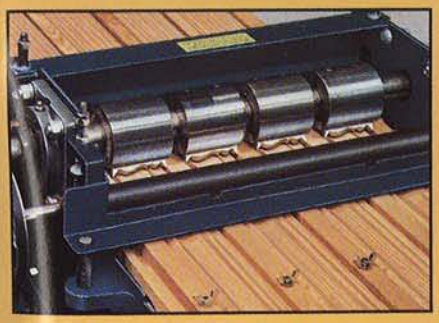

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Editor, Workbench Magazine

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It's a classic machine. The Delta Unisaw® 10" Tilting Arbor Saw. Standard of the industry.

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